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COMPUTERWORLD

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Stolen 9370 recovered; owner wants to unload it after tragedy unfolds. Page 2.

3090 overhaul adds momentum to ESA

BY STANLEY GIBSON
CW STAFF

IBM hoisted its mainframe users to a higher performance plateau in their climb to the Summit last week, introducing 10 mainframes, including its most powerful processor ever.

The ES/3090 S series takes IBM mainframe power past 100 million instructions per second, according to most estimates. IBM pegged the price/performance improvement over the previous E models at 15% to 25%.

IBM Vice-President James Cannavino claimed a Model 600S, equipped with the ESA operating system and running IBM's DB2, can perform more than 130 MIPS. Such a configuration can handle 270 transaction/sec., he said.

The processors will bring more power to IBM's largest customers, many of whom will need it to run the resource-demanding MVS/ESA operating system and DB2 relational database management software.

In addition to the S series, IBM announced the following changes last week:

- Graduated software pricing for 3090 E and S models.
- A 40% improvement in the 3090 vector facility.
- Fiber-optic channel extenders.
- Shipment of MVS/ESA one month early and the 3990 Models 1 and 2 storage controllers two weeks early.

George Conrades, IBM's senior vice-president, called the S series models "the highest powered general-purpose processors available." Running DB2 under ESA, he claimed, provides 56% improved performance over the E models.

Hinting at future enhancements, Conrades said, "Don't think even for a second that we are done evolving the 3090 family." Analysts suggested such

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Road map
IBM's 3090 upgrade path goes in many directions, as shown for current users of the Model 200 and 200E

200S (39.8 MIPS)	$2.2	$1.4
300E (46.9 MIPS)	$1.8	$1.6
300S (55.6 MIPS)	$3.7	$2.6

* All MIPS figures are International Data Corp. estimates

INFORMATION PROVIDED BY IBM
CW CHART

Minisuper party's over

Prime bails out as market hemorrhage begins

BY NELL MARGOLIS
CW STAFF

Companies are bleeding dollars, executive heads are rolling, employee rosters are getting slashed: One might venture that the long-predicted shakeout in the minisupercomputer market has struck — with a vengeance.

"What's wrong with the minisuper market is simply that there are too many companies in it," said Gregory Kosinski, a senior analyst at San Jose, Calif.-based Dataquest, Inc.

Now there is one less. After its vaunted entry earlier this year, Prime Computer, Inc. last week pulled its MXCL minisuper from the market and canceled a marketing agreement with Milpitas, Calif.-based Cydrome, Inc., which manufactures the machine.

The decision was "a real simple matter of dollars and cents," said Gerald Butler, Prime's vice-president of engineering and scientific products. The company experienced greater price competition and less growth in the minisupercomputer market than it had anticipated, he added.

"This is a healthy move on Prime's part," said Paine Webber, Inc. analyst Stephen K. Smith. And no wonder — taken last week, a snapshot of the minisuper niche revealed the following scene:

- Saxpy Computer Corp. on the block.
- Elxsi Corp. awash in red ink and with its second new president in two years.

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Don't wait! PC price level bottoms out

BY DOUGLAS BARNEY
CW STAFF

In late July 1985, Corona Data Systems, now Cordats Technologies, Inc., cut the prices of its personal computers in half. The move was typical for a market that was being rocked by vendor bankruptcies and downward-spiraling prices.

In those days, it sometimes seemed prices would never stop falling. PCs, some people predicted, would become as cheap as videocassette recorders.

Not so. PC price cutting has slowed to a trickle, and low-end machines are nearly as expensive today as they were a year ago. In fact, the average price a dealer pays today for a microcomputer has actually risen, largely because of the use of more powerful and expensive microprocessors such as the Intel Corp. 80286 and 80386 chips, according to IMS America Ltd. in Ambler, Pa.

Higher prices, in turn, mean PCs are less of a rubber-stamp purchase for MIS buyers. "As soon as the prices go up, you have to question whether the ap-

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Bells ring hollow in information business

BY KATHY CHIN LEONG
CW STAFF

They might as well have been selling shoes.

Four and a half years after the Bell system breakup, corporate users are not convinced that the regional Bell holding companies can translate their 100 years of voice communications expertise into a new role as stellar purveyors of computer gear.

"There's a hard road ahead of them," observes Al Crawford, vice-president of telecommunications at American Express Co. "There is a helluva difference between selling a voice system and a computer system."

To the holding companies' frustration, the Al Crawfords in corporate America are many. These users, skeptical and wary, do not want to risk being burned by inexperienced computer entrants.

Ironically, the holding companies were confident that years of selling to telephone managers would automatically give them an entrance into MIS accounts. With that misconception, they have plunged into computer retailing, systems integration, computer leasing, computer service and repair, network management and software development.

All seven assert they are doing well in the

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More Wang for the buck. Inexpensive, high-performance VS 5000 minicomputer rollouts are expected to bolster Wang's office line. Page 4.

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"This looked like a good time to be standing on the sidelines... instead of being in there where companies are beating each other's brains out."

GERALD BUTLER
PRIME COMPUTER, INC.

On the company's decision to withdraw from the minicomputer market. See story page 1.

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FBI hunt turns tragic

Suicide of IBM 9370 theft suspect mars recovery

BY KATHY CHIN LEONG
CW STAFF

SANTA CLARA, Calif. — An IBM 9370 reported stolen in February has been returned to its rightful owners, computer distribution company Marketex Computer Corp. But now President Russell Schneider cannot wait to get rid of it and is anxious to sell it to anyone willing to write a check for any amount.

The man who apparently stole the mainframe was caught at an apartment building in Tampa, Fla., in May. When FBI agents besieged his apartment, the 25-year-old unemployed computer hacker shot himself before he could be arrested.

According to the FBI, the suspect, Greg Andrew Stevens, had been traveling across the country under a variety of aliases. When he called Marketex to order the computer, he said his name was Jim Peters.

Few people in Tampa knew Stevens, and no motive was discovered for the alleged theft or the suicide.

The system, a 9375 model, was housed in a nearby warehouse.

"When we first heard about it, we were pretty shaken up for a day or two," Schneider said. "I'm very upset that a young man lost his life over a computer. Now I just want this computer gone."

The computer is being checked at a local IBM maintenance center and is operable, Schneider said. The tragedy has caused Marketex to change a few of its customer policies.

From now on, Schneider said, any unknown customer who orders a computer must send a check deposit from the company first, to prevent fraud. "We are also going to make a call to the bank and the firm to verify employment," he said.

In January, "Peters" called Marketex and ordered a used IBM 9375. He falsely said he worked at Systems and Simulation, Inc., an actual engineering firm in Tampa. Marketex ran a check on the company but never on Peters.

No cheers for FCC price plan

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Business network associations, in comments filed last week, said the Federal Communications Commission's plan for price-cap regulation has numerous flaws that would make users worse off than they are under the existing regulatory system.

"Many of the flaws in the proposal have a common thread," the Ad Hoc Telecommunications Users Committee said. "They apportion virtually all of the risks to the consumer and virtually all of the rewards to the carrier."

The formal comments came in response to the FCC's proposal to use price caps instead of profit ceilings to regulate the rates of AT&T and local exchange carriers (CW, May 16). The caps would be adjusted yearly using the formula of the inflation rate minus 3%.

The FCC selected the 3% figure after estimating that the communications industry's annual productivity growth rate has been 2.5% higher than the national average and adding a 0.5% dividend for consumers.

AT&T and the regional Bell holding companies generally supported the price-cap approach, but they called for less price regulation than the FCC proposed and argued that the 3% annual offset is too high. Most of the holding companies said their offset should be cut to 2.5% or less.

Complaints aired

Users groups such as the ad hoc committee and the International Communications Association had the following complaints about the regulatory proposal:

- The 3% productivity offset in the formula is far too low to provide substantial rate cuts for users under the price-cap scheme.
- The baseline for the price caps would be existing rates, yet some of the local carriers' rates are under FCC investigation for being too high.
- The FCC proposal does not provide users with a viable method of protesting and overturning rates that exceed the caps.
- The price-cap system should not be adopted for the local carriers until after the novel scheme is proven workable for AT&T.

However, the users groups said they are optimistic that if major changes are made, the commission's plan could be a benefit to consumers. Specifically, they suggested that the 3% offset be raised to 4% for AT&T and 6.5% for the local exchange carriers to reflect the expectation that increased use of digital switches and fiber-optic technologies will make the carriers more efficient.

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Hogan reports loss

Cuts work force on top of being $5.9M in the red

BY ROSEMARY HAMILTON
CW STAFF

Although Hogan Systems, Inc. executives talked recently of how the company was building momentum, the company last week reported a $5.9 million net loss for the quarter ending June 30 and said it had chopped its work force by 20%.

Industry analysts said they expected the company to end up with a loss, primarily because a badly needed big contract was not going to be signed by the end of the first quarter. However, analysts said they did not expect a loss of that magnitude.

Furthermore, analysts said Hogan's claim that it will be profitable for the remainder of the year will be a difficult goal to achieve.

"I'd say that's a tall order," said Cato Carpenter, a vice-president and software analyst at Alex Brown & Sons, Inc. in Baltimore. "The key to [a profitable year] is going to be new software licenses, so they'll have to have quite a good year."

The losing quarter and cutbacks come at a time when Hogan is struggling to improve revenue and defend its landmark alliance with IBM, which, after two years, has yet to yield noticeable results.

The company reported revenue of $10.8 million, down from $11.4 million in the same quarter a year earlier. The loss reflected two unexpected write-offs: $3.6 million for a canceled development project and $1 million in severance costs for laid-off employees.

Hogan officials last week presented both the quarterly loss and the cutbacks as housecleaning moves. The company said neither event should negatively impact its landmark deal with IBM, to which both companies remain committed.

'Costs out of line'

"After assimilating two companies last year, we found our costs to be out of line with revenue projections," said Patric Jerge, executive vice-president at Hogan. "The actions we've taken put our expenses in line and will ensure that we're profitable for the remainder of the year."

The expected contract, which would have greatly improved first-quarter results, was signed early last week. Standard Chartered Bank of London signed on for $7 million worth of software and services with the Hogan mainframe banking applications. Hogan retains the right to sell the software overseas, while IBM has exclusive rights to it in North America.

The staff cutbacks, which bring Hogan's worldwide ranks down to 400, were made in most segments of the company, officials said. Hogan has been cutting back since June 30, and officials said the reduction came from dismissals and attrition.

The company's product services department and its consulting group were the heaviest hit. Of the 100 ex-Hogan employees, 40% came from those two groups.

The discontinued development project was a little-talked-about micro-to-mainframe link development effort. An analyst who follows Hogan said he had never heard of such a project.

Wang's low-end line receives rave reviews

BY NELL MARGOLIS
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc.'s aggressively priced new low-end minicomputer line, positioned as a Microvax and AS/400 beater, debuted last week to general technological acclaim.

Analysts saw the new VS 5000 family as more likely to score with current customers than to recapture ground lost to Digital Equipment Corp. and IBM.

Available immediately, the systems, which accommodate six to 64 users, are priced from $8,800 — a 32% reduction in the cost of an entry-level VS. According to the company, they are four times more powerful than the low-end VS models they are expected to replace.

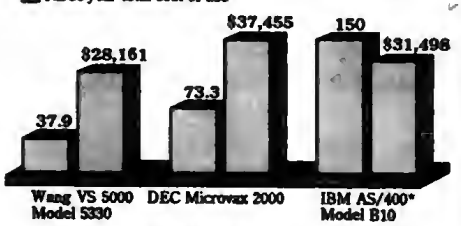
Gerry Paul, Wang vice-president of systems and research, claimed that the VS 5000's price/performance far exceeds that of DEC's and IBM's low-end entries, the Microvax and the Application System/400.

The technological advances of the VS 5000 "give Wang what it needs to survive," said Craig Symons, vice-president of mid-range systems at the Gartner Group, Inc. in Stamford, Conn. "Marketing and sales are the other side of the equation; for that, we'll have to wait and see."

The four-model VS 5000 series is based on a very large-scale integration CMOS microprocessor capable of speeds up to 33.3 MHz and features a 20M byte/sec. bus — almost seven times the capacity of DEC's Q-bus.

Time check

Wang claims price/performance edge over DEC and IBM for its VS 5000 line, as evidenced in its comparison of four-user systems



*Benchmark run on an IBM 9370; AS/400 figures extrapolated by Wang based on comparisons of the 9370 with the AS/400

INFORMATION PROVIDED BY WANG LABORATORIES, INC.
CW CHART

Wang President Frederick A. Wang emphasized the company's new strategy of providing VS 5000 users a choice of operating systems: AT&T Unix System V-compliant native-mode VS IN/IX as well as Wang's VS. Those alternatives, between them, support some 2,600 currently available business-oriented software applications, he said.

Beta-test user Rod Christenson, information technology director at American Family Mutual Insurance Co. in Madison, Wis., said, "we ran compiles on the VS 5000 in May and it was 2½ times faster" than the company's VS 5s and 6s.

Two days after the VS 5000 announcement, Wang announced a healthy profit for the fiscal year just ended, although fourth-quarter results ebbed significantly.

Profits for the year were $92.7 million, compared with a year-earlier loss of $70.7 million, as revenue increased 8% to $3.07 billion. In the fourth quarter, profits plummeted 59% to $13.4 million compared with a year earlier, and revenue dropped to $822.8 million from last year's $824 million. Analysts viewed Wang's fourth-quarter sag as one more sign of a sluggish minicomputer market.

DEC posts 25% rise in revenue

BY MICHAEL ALEXANDER
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. surprised many Wall Street analysts last week with its announcement that revenue was up 25% over the same period last year. Although profits were up only 6% from a year ago, the investment community had expected that a weakness in sales of DEC's high-end VAX line would cut into margins.

DEC reported revenue of $3.34 billion in its fiscal fourth quarter, up from $2.67 billion a year ago. Profits for the quarter were $401 million, or $3.08 a share, up from $377 million, or $2.85 a share, last year.

Sales of DEC's VAX 8000 line, which exceeded 3,000 systems for the year, and other high-end systems were strong in the fourth quarter, the company said. DEC also said its international sales flourished and accounted for 50% of its overall business.

"DEC's earnings were better than expected and far better than any company in the computer industry," said Barry F. Bosak, an analyst who follows DEC for Eberstadt Fleming, Inc. in New York.

For the fiscal year, DEC's revenue rose 22% to more than $11.47 billion, up from $9.39 billion in 1987. Profits for the year topped $1.3 billion, up 15% from $1.14 billion last year. DEC displaced Unisys Corp. to take over the No. 2 spot among the world's largest computer companies.

'Outpacing industry'

"We are pleased by the strong gains as our growth continued to outpace that of the industry," DEC President Kenneth H. Olsen said in a prepared statement.

DEC's research and engineering and other expenses were slightly higher than had been forecast but were not out of line given the many products DEC introduced in its fiscal year, Bosak said. "DEC has gotten a better hold on its cost controls. To say the results were laudable would be an understatement," he said.

DEC said that its new Microvax 3000 series sold briskly and that it shipped more than 500 VAX 6200 systems, which were introduced three months ago. The company said it also shipped 30,000 workstations for the year. Analysts calculate that DEC now holds the No. 2 spot after Sun Microsystems, Inc. in workstation sales.

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NEWS SHORTS

DG targeted by Grumman

Grumman Systems Support Corp. is the latest third-party computer maintenance vendor to challenge a hardware manufacturer. Grumman said last week it has filed an antitrust suit charging Data General Corp. with unfairly monopolizing the market for servicing DG computers. Grumman charged, among other things, that DG refused to provide it with necessary diagnostic software to perform such services. DG issued a response claiming that Grumman's suit was a tactic to battle DG's pending suit, which charges Grumman with copyright infringement and trade secret theft.

Sales slump idles CDC plants

Memories of the 1985 computer slump have been rekindled at Control Data Corp. with the planned idling of five manufacturing plants during the last week in August. The closings, a result of disappointing mainframe and supercomputer sales, will mean an unpaid week for 2,500 workers at plants in Kansas City, Mo., and Sunnyvale, Calif., as well as three in Minneapolis. CDC's second-quarter earnings report was a bit brighter, as the firm earned $9.2 million, compared with a $5.5 million loss one year earlier. The company reported that revenue rose 21% to $951.7 million.

Second casualty in Windows suit

The U.S. district judge presiding over three lawsuits involving Hewlett-Packard Co. — including the much-publicized Apple Computer, Inc. copyright infringement suit against HP and Microsoft Corp. — may have to disqualify himself from presiding over those suits because his son works for HP in its Corvallis, Ore., operations. Bausch & Lomb, Inc. filed a motion last week asking Judge Robert Aguilar to withdraw from its case against HP and vacate his ruling. If the judge does so, it is likely he will also disqualify himself from the Apple suit, which could set the trial proceedings back several months. Previously, HP had successfully sought the dismissal of one of Apple's attorneys over a reputed conflict.

Intel's Noyce heads collaboration

After a yearlong search, Sematech finally has a chief executive officer. Robert N. Noyce, cofounder and vice-chairman of Intel Corp. and an inventor of the integrated circuit, was named last week to head the Austin, Texas-based research consortium; additionally, Paul P. Castrucci, a senior member of IBM's corporate technology committee, was named chief operating officer of the semiconductor research consortium. Noyce, who will retain his position with Intel, was first approached about the job a year ago but disqualified himself because of management changes at Intel. Noyce is considered an effective industry advocate on Capitol Hill, and the appointment was widely hailed in the industry. Castrucci retired from his 32-year career at IBM, where he was responsible for many of the company's semiconductor advances.

NBI sets up new chief

Former Storage Technology Corp. executive Stephen G. Jerritts last week was named president and CEO of NBI, Inc., following the resignation of Thomas S. Kavanagh. The financially troubled word processing equipment maker rejected in March a $62 million takeover bid by Capital Associates, Inc., a Colorado Springs computer leasing firm. A day after his appointment, Jerritts hired Plexus Computers, Inc. Vice-President Michael L. Kaessner to head NBI's engineering programs.

Lotus sends back Report

Lotus Development Corp. is taking steps to streamline and focus its product mix and has been slowly selling off marginal packages. The latest casualty is 1-2-3 Report Writer, which was sold back to its original author, Concentric Data Systems Inc. in Westboro, Mass. The product reportedly will be renamed R&R Worksheet Report Writer and will be enhanced by Concentric. Expect a new version this week with a $50 upgrade for current customers.

AT&T's UNMA makes shortlist

BY ELISABETH HORWITT
CW STAFF

Ten months after its introduction, AT&T's Unified Network Management Architecture (UNMA) is showing up beside IBM's Netview on the shortlists of companies choosing their network management systems. Billed as a predecessor of the still-embryonic Open Systems Interconnect (OSI) protocols, UNMA will allow users to migrate painlessly to the standard when it matures in a year or two, AT&T claimed.

And although some key UNMA specifications are still missing, the same is true of Netview, according to Stan Welland, director of telecommunications at General Electric Corp.

The two big shopping criteria for Welland are whether the system has the features his company needs now and whether it is supported by GE's installed base of networking devices, he said.

GE plans to decide by year's end whether it will go with Netview, UNMA or a group of stand-alone network management systems. "We could let more aggressive users be the guinea pigs, but there is the risk of waiting too long."

Multiple choices

Black & Decker Corp. is evaluating Netview for its IBM installation in data processing and UNMA to manage AT&T multiplexers, modems, private branch exchanges and switches for the data communications side of the house. Basically a two-vendor shop, the company sees no advantage in trying to standardize around just one network management system, according to Data Communications Manager William Thompson.

Eventually, the appliance firm will probably establish two-way communications between Netview and UNMA, "because if you don't feed [network] information to Netview, it automatically calls any [problem] it sees a communications problem."

While OSI-based products are unlikely to dislodge Netview from IBM's installed base of Systems Network Architecture (SNA) users, IBM has no such hold on telecommunications vendors, some of which are finding Netview to be a difficult system to tie into. Currently, some 46 networking companies have announced products or intentions to support Netview while only 10 vendors support UNMA. On the other hand, UNMA has been around for less than a year, and Netview is almost two years old. And the OSI-based protocol has some definite attractions over Netview for third-party vendors.

Digital Communications Associates, Inc. (DCA) supports Netview because "like it or not, IBM has 40,000 SNA networks installed worldwide," DCA product manager Martin Grubin said. The company also supports UNMA and OSI because it believes OSI will eventually become the standard, he added.

DCA likes OSI-based systems because the specifications are published and "pretty wide open," while IBM has refused to allow third-party vendors to work directly with Netview software "at the heart of the system," Grubin said.

Third-party devices must talk to Netview through IBM's Netview/PC interface. Although this arrangement may work for collecting statistics to be analyzed later, it is too slow and cumbersome for monitoring a network in real time and responding instantly to a line or device failure, Grubin noted.

In contrast, the UNMA-OSI scheme allows various vendors' network management systems to act as peers, each controlling its own subsection of the network and exchanging information with others when necessary, said William Gilbert, AT&T's division manager of network management planning.

Like AT&T, IBM claimed its system can support either distributed or centralized management — with the proviso that more users are tending toward the centralized approach.

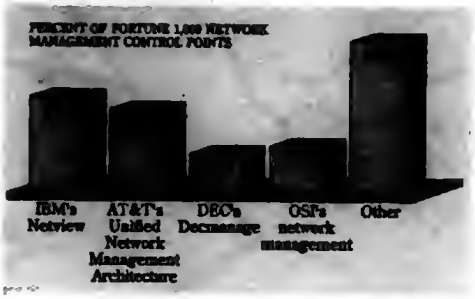
Netview functions can be distributed across multiple IBM 370s or 9370s, according to Robert Anderson, manager of telecommunications software product management at IBM.

IBM recognizes that this "is not the most efficient" way to do things and should be providing LU6.2 peer-to-peer communications for Netview nodes based on IBM equipment, Anderson indicated. The vendor has not yet taken a position on whether to use LU6.2 to link non-IBM systems to Netview, he said.

But if Netview lacks some distributed functionality, AT&T products that fall under the UNMA umbrella are still far from the unified, interactive system the vendor portrays, Black & Decker's Thompson said.

Future view

Netview is predicted to be one of four network management standards by 1995



INFORMATION PROVIDED BY FORRESTER RESEARCH, INC.
CW CHART

Seven to jump OSI gun

BY ELISABETH HORWITT
CW STAFF

NEW YORK — Seven vendors formed a consortium last week dedicated to providing users with Open Systems Interconnect-based multivendor network management — at least two years before OSI-based network management products are expected to arrive.

Within 18 months, the consortium hopes to be able to demonstrate interoperability among different members' network management systems using a subset of OSI protocols that can then be implemented in commercial products. This will satisfy users unwilling to wait four or five years for the OSI network management standard to mature and allow vendors to start implementing it in their products, forum members said.

The founding members of the OSI/Network Management Forum are AT&T, Amdahl Corp., Hewlett-Packard Co., Northern Telecom, Inc., Telecom Canada, British Telecommunications PLC, and STC PLC Group, an international network and information systems provider based in London.

The seven firms each agreed to use common OSI protocols to

Continued on page 7

IBM dodges antitrust bullet

BY CLINTON WILDER
CW STAFF

PHILADELPHIA — IBM successfully fended off another antitrust challenge when a federal judge recently dismissed a third-party mainframe refurbisher's claim that IBM's pricing policies constituted unfair competition.

In a July 21 decision made public by IBM last week, U.S. District Judge Thomas N. O'Neill Jr. dismissed a 1985 antitrust suit brought by Allen-Myland, Inc., a small Broomall, Pa.-based firm providing IBM mainframe upgrade and reconfiguration services. In a 93-page ruling, O'Neill said Allen-Myland failed to prove that IBM unfairly dominates the large computer market in violation of the Sherman Antitrust Act.

In charging that IBM unfairly restrained competition, Allen-Myland cited two specific IBM policies: the bundling of parts and labor into one charge for IBM 3080 upgrades and the institution of an Installation and Warranty Service Charge in 1980 for mainframes shipped between countries.

Allen-Myland's lead attorney, Robert G. Levy of Baltimore, refused to comment on whether the plaintiff will appeal O'Neill's ruling. A decision on IBM's counterclaims against Allen-Myland is still pending.

The case involved more than 350,000 pages of documents and testimony or depositions from some of IBM's highest level executives, including former Vice-Chairman Paul J. Rizzo and current Senior Vice-President C. Michael Armstrong, IBM's ranking executive in Europe. Witnesses included top executives from computer-leasing firms Comdisco, Inc. and CMI Corp. and some MIS professionals.

Kitchen sink defense

O'Neill essentially agreed with IBM that its market, for antitrust purposes, cannot be narrowly defined as the sale of new mainframes. He said IBM competes in the mainframe world with leasing companies, clustered minicomputers, storage products, memory and channel upgrades, software and service bureaus.

IBM used a similar defense in the massive antitrust case brought against the company by the U.S. Department of Justice in the 1960s.

"IBM's defense is to include everything but the kitchen sink to get its market share down," said Richard T. DeLamarter, a former senior economist who worked on the department's antitrust effort and author of *Big Blue: IBM's Use and Abuse of Power*. "If you don't show they have a dominant share, you can't show they have the power to compete unfairly."

Computer Dealers and Lessors Association President Kenneth Boulding said IBM's victory would have little effect on the secondary market but shared DeLamarter's reaction.

"It sounds like [Allen-Myland] just got outlawyered," he said. "IBM got the judge to accept their relevant market theory, but common sense tells us that IBM having only 20% or 30% of the market is horsefeathers."

Allen-Myland claimed that IBM charged high prices for parts and low prices for labor on 3080 upgrades in a deliberate move to drive third-party upgrade providers out of business. But O'Neill said IBM's thermal conduction module technology made upgrades much easier and it was able to fairly reduce labor charges.

OSI

CONTINUED FROM PAGE 6

communicate with other network management systems while maintaining proprietary protocols to manage their own networking devices.

Willem Roelandts, general manager of HP's network systems group, said the intent is to protect users' installed bases while providing multivendor management before a fully mature OSI.

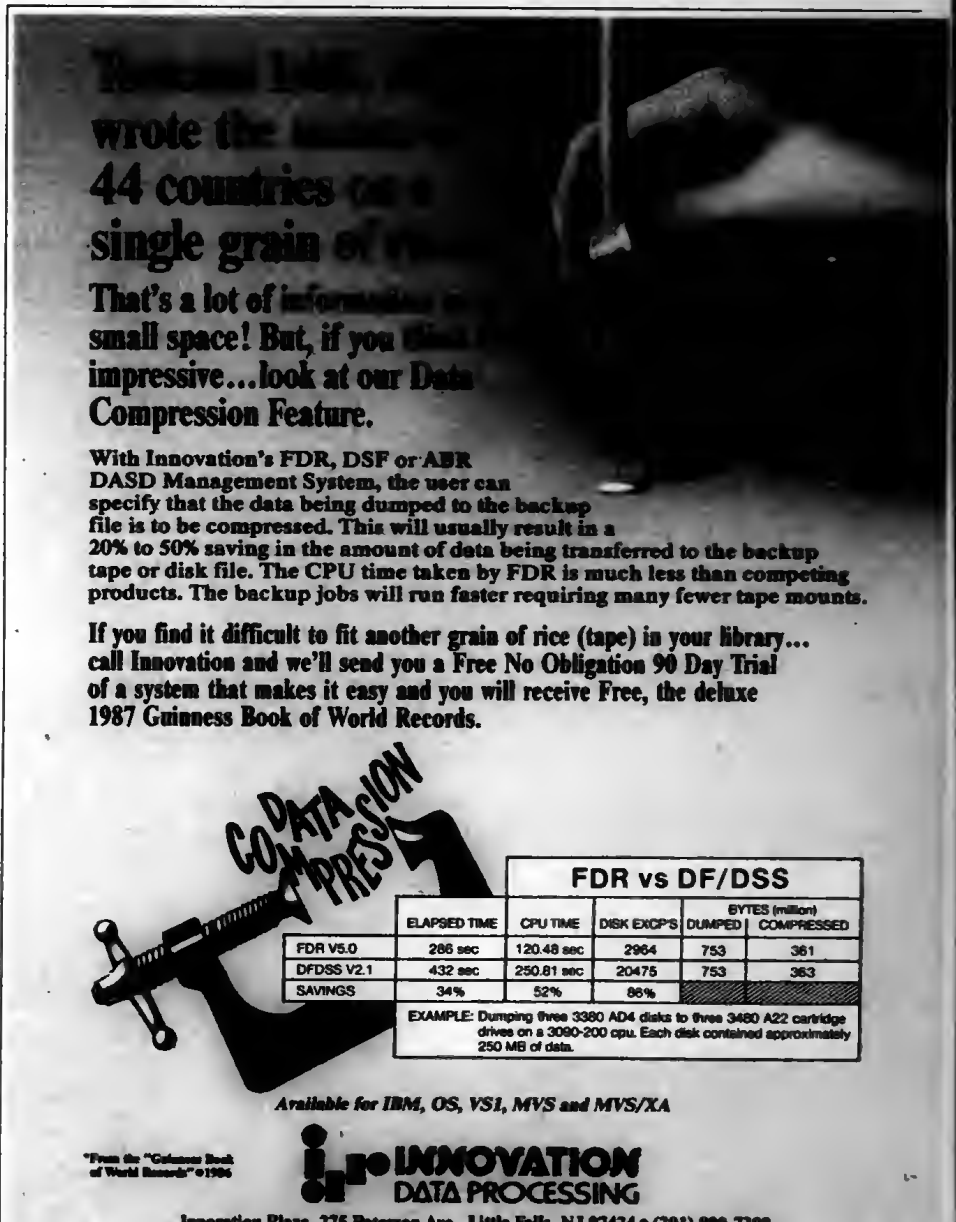
Forum members hope to avoid implementing incompatible interpretations of the OSI standard by using the same set of OSI protocols, said Wayne McPherson, group vice-president of product development and engineering at Unisys Corp.

The consortium's distributed network management approach may be difficult to implement, because "the only way you can determine which networking component is st fault is to tap all network management databases," said David Passmore, a principal at Fairfax, Va., consulting firm Network Strategies, Inc.

The forum's OSI approach does provide for a true peer-to-peer network of management nodes, each in charge of its own network domain, forum representatives said. It will also support a hierarchical configuration in which one system would act as administrator, collecting relevant information from the others.

General Electric Co. plans to implement a centralized network control center and database, whether it chooses Netview or AT&T's OSI-based Unified Network Management Architecture, according to Stan Welland, GE's vice-president of corporate telecommunications.

A forum task force has already chosen the OSI packet-switching protocol X.25 for wide-area network management and the OSI Ethernet 802.3 protocols for local-area network connections.



CMS problems keep VM from general public

BY ROSEMARY HAMILTON
CW STAFF

Four months after it was scheduled for general release, IBM's VM/XA SP 1 is not yet generally available. Instead, it is shipping to selected customers in what IBM calls a phased introduction.

IBM would not say whether it will make the VM offering, which was intended to be its first fully production-oriented VM for large systems, generally available in the near future. Its follow-on, VM/XA SP 2, is slated to be out in December.

A New York user who requested anonymity said he attended a VM workshop last month and was told by IBM executives that it was undecided whether VM/XA SP 1 will become generally available. In response, an IBM spokeswoman said, "We don't comment on IBM-customer meetings."

According to users and observers, IBM has had problems with the CMS component of the operating system. This portion would provide the interactive environment to support large numbers of users.

Apparently, the CMS problems are not resolved. Users and observers said IBM is shipping VM/XA SP 1 to customers who are not CMS-intensive. A New Jersey user, who also requested anonymity, said his shop received VM/XA SP 1 in July and is treating it as a "test bed." He said IBM is shipping to sites "who swear up and down that they aren't CMS-intensive."

According to Gabe Goldberg, director of technology at VM utility supplier VM Systems Group, Inc., the CMS component of the operating system requires more development, so IBM "is reluctant to let it out while they're doing the work."

Skirting

In response to *Computerworld's* inquiries, IBM issued a statement that did not specifically address reported problems with the CMS component. It said of the initial VM/XA SP 1 shipments, "Multiple preferred guest and other guest requirements have been able to attain production status quickly, while large CMS environments and numerically intensive computing environments have required more careful planning."

VM/XA SP 1 was announced in June 1987 with a scheduled general availability date of March 1988. At the end of March, an IBM spokesman said the company had not met the target date and would announce a new shipping date early in the next quarter. At the end of April, IBM quietly launched the phased introduction of the operating system, an approach that will continue for the near future.

"I'm more comfortable with them doing it this way than with what happened with HPO 5," Goldberg said. VM SP High Performance Option 5 was shipped with bugs that required IBM to re-release another version.

Summit's shadow on S machines

With more capacity around the bend, some choose to hang on and wait

BY JEAN S. BOZMAN
CW STAFF

For some, IBM's S series upgrade to the 3090 comes in the nick of time as application needs rapidly outpace processor power. But for many other users, the decision is complicated by the realization that this series of enhancements to the current line will be overshadowed in late 1989 or early 1990 by a completely new mainframe, popularly referred to as Summit.

The deciding factor on an S purchase, users at large IBM mainframe sites said, will be an immediate need for more capacity. But customers are mindful of the fact that, without at least owning an IBM 3090 E, they will not be able to run MVS/ESA.

"We're hanging on by our fingertips to the IBM 3081 K we have," said Bill Backs, director of information technology at textbook publisher Scott, Foresman & Co. in Glenview, Ill. "We're hoping we can hold on until Summit is announced next year."

Backs explained that Foresman's ordering cycle peaks every summer and that the cost-conscious company would like to have the option of leapfrogging 3090 technology altogether or getting S models at lower prices once Summit is announced.

One Midwest Fortune 100 company said it is interested in upgrading an existing 3090 Model 150E into a Model 170S to gain incremental capacity growth. But the company, which does not want to be identified, has no immediate plans to replace its three 3081s or even upgrade them to S models.

"We're only looking for interim performance gains until 1990 or 1991," an MIS manager at the firm said. "We just don't need that many MIPS."

Bullish on ESA

George DiNardo, an executive vice-president at Mellon Bank NA, based in Pittsburgh, said he plans to go to S models as upgrades only, not as wholesale purchases of "big iron."

DiNardo, who appeared at the IBM announcement to talk about Mellon's early installation of ESA two months ago, appeared more excited about ESA than about field upgrades.

"I'm so excited about ESA," he said, "that I plan to install it on all my IBM machines." But although he has provisional plans to upgrade two standard 3090 Model 200s to 3090 Es, DiNardo said he has made no commitment to upgrade his Model 400E and Model 600E to S models.

For some, however, the improvement at the high end comes just in time. "I can breathe a sigh of relief," said Nancy Fletcher, vice-president of information resources at Provident Life and Accident Insurance Co. in Chattanooga, Tenn., explaining that she was concerned about exceeding the capacity of the 3090 Model 600E currently in use.

Provident wants to keep its application on one machine, Fletcher said, rather than breaking it up to run on more processors.

How high is up?

For many corporations, such as Nabisco Brands, Inc., the acquisition of an S model will depend on both the capacity boost it would bring and the financial package under which it is offered.

"Our plan before the announcement was to install more IBM 3090 Es," said Thomas Zoeller, staff vice-president of information processing services at Nabisco in East Hanover, N.J. "We're just at the point where we think we need a pretty hefty upgrade, and the S upgrade may not be enough."

Leasing companies may ultimately be the biggest purchasers of IBM 3090 S machines, according to William S. Husband, senior consultant to The Meridian Group, a Deerfield, Ill., leasing firm. "There's always a lot of swapping-out of leased machines any time there's a major IBM mainframe announcement," Husband said.

"Leasing companies believe they're going to be able to provide users with a lot of attractive alternatives and options to purchase," he continued. "By leasing, customers can meet their growing capacity needs without making a decision like whether or not they have to purchase an IBM 3090 now or leapfrog 3090 technology altogether by waiting for Summit."

3090

FROM PAGE 1

enhancements could be announced next year in advance of the next generation of IBM mainframes, generally referred to as the Summit series, expected in late 1989 or 1990.

Analysts agreed that last week's announcement puts IBM's line at least even with Amdahl Corp.'s 5990 mainframe, announced several weeks ago.

However, Don Bellomy, an analyst at International Data Corp. in Framingham, Mass., asserted that performance claims at that level are trivial.

However, most agree that IBM does claim an edge in its ESA software, with which the company can outperform Amdahl, according to Robert Djurdjevic, president of Annex Research in Phoenix. Although Amdahl has promised to match ESA, Djurdjevic said IBM has more than a year's lead in the software race with its plug-compatible rival. Djurdjevic predicted Amdahl will cut prices in response to IBM's announcement.

Among the technological enhancements in the S series were:

- Doubling central storage to 512M bytes.
- Increasing expanded storage to 2G bytes.
- Doubling CPU cache size to 128K bytes.
- Enhancing floating-point performance speeds in the range of three to five times over the E machines' speeds.
- Processor cycle times of 15 nsec on the Models 180S and above; 17.75 nsec on the Models 150S and 170S; and 18.2 nsec on the Model 120S. The cycle time on the Models 180E and above is 17.2 nsec.

In a shift from earlier policy, IBM is making a wide variety of upgrades available. There are a total of 67 possibilities, including upgrades from 3090 base models to S models and from E models to S models.

IBM is also offering so-called "horizontal upgrades," for example, from a Model 200E to a 200S. When the 3090 E models were announced in January 1987, IBM did not provide such upgrades, requiring users to move up to higher models.

However, IBM has priced the upgrades to make horizontal upgrades less attractive and upgrades to the next higher model more attractive, Bellomy noted.

"The idea is to get the user into the E models; that's the architecture of the future," he said. Upgrades to and within the E series are still offered. While E and S models run the MVS/ESA operating system, the 3090 base models do not.

The upgrades are slated to be available in the first quarter of 1989. Bellomy predicted a price hike on base model-to-S model upgrades early next year.

Absent from the announcement were S models in the 4381 line. Earlier this year, two ESA-capable 4381 E models were unveiled.

Most of the S models are scheduled to be available in the fourth quarter; the low-end Models 120S and 150S are set to be available in September.

Under a special purchase plan, users can order an E model now and upgrade to an S model within 18 months of the installation date at a price that does not exceed that for a new S model.

In addition, IBM lowered the prices on its E machines and on upgrades within the E line by $50,000 to $150,000. Those cuts apply to E models and E model upgrades shipped by Sept. 30 and installed by Oct. 20.

Third generation

IBM's ES/3090 S series includes 10 systems ranging to 102 MIPS

Model	Maximum central storage (in bytes)	Maximum expanded storage (in bytes)	Price (in millions)	MIPS*
120S	64M	256M	$0.9	7.4
150S	64M	256M	$1.7	11.5
170S	64M	256M	$2.1	14.4
180S	128M	256M	$2.9	20.5
280S	256M	512M	$5.4	38.2
200S	256M	1,024M	$4.9	39.8
300S	256M	1,024M	$6.7	55.6
400S	512M	2,048M	$9.5	72.2
500S	512M	2,048M	$11	87.8
600S	512M	2,048M	$12.4	102

* International Data Corp. estimates

CW CHART

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AR	Little Rock	Oct 13
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	Los Angeles	Sep 15, Oct 18, Nov 15
	Oakland	Oct 6
	Sacramento	Sep 22, Nov 18
	San Diego	Sep 8, Oct 6, Nov 3
	San Francisco	Sep 14, Oct 11, Nov 9
	San Jose	Sep 20 Oct 26, Nov 17
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	Colorado Springs	Oct 25
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	New Haven	Sep 8
	Stamford	Nov 15
DC	Washington *(Federal)*	Sep 16, Oct 21, Nov 18
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	Jacksonville	Oct 19
	Orlando	Sep 14
GA	Atlanta	Sep 7, Oct 5, Nov 9
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IA	Des Moines	Sep 13, Nov 18
ID	Boise	Oct 5
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	Springfield	Sep 14, Nov 9
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	Long Island	Sep 20, Oct 19, Nov 16
	New York City	Sep 14, Sep 28, Oct 12, Oct 26, Nov 9, Nov 16
	Rochester	Sep 14, Nov 2
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COMPUTERWORLD

Tandy revs PCs across the line

BY JULIE PITTA
CW STAFF

FORT WORTH, Texas — Tandy Corp. bolstered its line of personal computers last week with versions of Intel Corp. 8088-, 80286- and 80386-based microcomputers.

The company's new 386-based system, the Tandy 4000 LX, offers a 20-MHz clock speed and features a standard IBM Personal Computer AT bus architecture. It provides 2M bytes of random-access memory and can run both Microsoft Corp.'s MS-DOS and Microsoft and IBM's OS/2 operating systems. The system is priced from $3,999.

Tandy had upgraded its previous model — a 16-MHz 386 called the Tandy 4000 — to add slots for a plug-in Intel 80387 math coprocessor and an internal 3½-in. hard disk drive. The price of that system remains at $2,599, according to the vendor.

Tandy also beefed up its 286 offerings with the Tandy 3000 NL, increasing the clock speed to 10 MHz. It offers an AT bus and the ability to run both MS-DOS and OS/2.

Additionally, four drive slots permit the installation of either 3½- or 5¼-in. storage devices and seven expansion slots for add-in boards. The entry-level price of the Tandy 3000 NL is $1,699.

A second new 286-based system, the Tandy 1000 TL, is an IBM PC XT compatible offering 640K bytes of RAM, a 3½-in. 720K-byte floppy disk drive and two front drive slots for 3½- or 5¼-in. storage devices. The system is priced at $1,299.

Tandy also added an 8088-based system, the Tandy 1000 SL, with 384K bytes of RAM, a 5¼-in. 360K-byte floppy disk drive and a single front slot for a 3½- or 5¼-in. storage device. The Tandy 1000 SL costs $899.

Both the Tandy 1000 TL and 1000 SL offer Tandy's Deskmate user-friendly interface, which includes pull-down menus and pop-up dialogue boxes.

Minisuper

CONTINUED FROM PAGE 1

- Multiflow Computer, Inc. with a 15% smaller work force after the recent layoff of 25 people.
- Alliant Computer Systems Corp. with revenue down and $8.9 million in the red in its second quarter, reportedly because of an expensive acquisition and lagging domestic sales.
- Convex Computer Corp., widely seen as the leader of the pack, reporting a second-quarter dip in earnings.
- Cydrome minus 59 of its 140 employees — mostly in the manufacturing area, according to President Andre Schwager — as a direct result of the demise of the Prime agreement.

Spectator sport

The way Prime sees it, Butler said, "this looked like a good time to be standing on the sidelines waiting to see how things developed instead of being in there where companies are beating each other's brains out." The Cydrome venture took $5.1 million off the bottom line for Prime's second quarter, reported last week.

Cutbacks in U.S. Department of Defense spending were cited by several vendors as the reason for disappointing financials. More conservative defense spending does sound one note in the minisuper market blues, market observers agreed, but it is far from the whole tune.

"It's a war out there," said Richard A. Shaffer, editor of New York-based "Technologic Computer Letter." One venture capitalist referred to the minisuper sector as "a kamikaze market."

In addition to the surplus of contenders, Shaffer said, the minisuper niche is a fast-moving, "highly unforgiving" market in which timing, timing and timing are three of the main advantages.

"Cydrome, for example, has strong technology, but they were late to market," he noted. "What a lot of people forget . . . is that you don't have to be the best in the technology industry; you just have to be first and good enough."

According to Dataquest figures, the minisupercomputer market, pegged at $253 million in 1987, will grow to almost $1.17 billion by 1992 — "slower growth than we originally anticipated but still healthy," Kosinski said. Last year, Dataquest's projections for the minisuper market were $1.2 billion by 1991.

Looming large in the $1.17 billion figure and in the current consternation that minisuper vendors are undergoing is Digital Equipment Corp., Kosinski said.

"A lot of the potential minisuper customers are reluctant to leave the VAX market," he said. "If DEC ever gets going in this market, as it says it intends to, it will have a lot of advantages." Although a DEC entry is not anticipated for another year, Kosinski said, "our [three-year] growth figures assume a healthy contribution on their part."

A minisupercomputer from DEC might swell the future market, but it is freezing the current one, said Bonnie Digrius, director of large systems research at Cupertino, Calif.-based market research firm Infocorp.

"People who don't need minisuper power right this minute but anticipate a need for it up the line are holding off buying until they see what DEC is going to do," she said. "The DEC factor is throwing a lot of confusion into the market."

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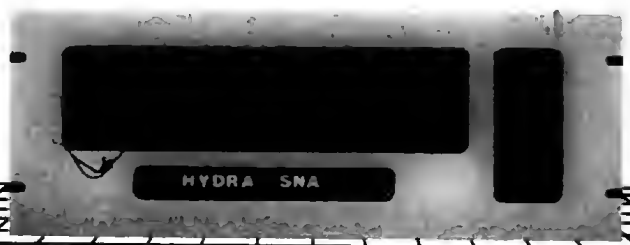

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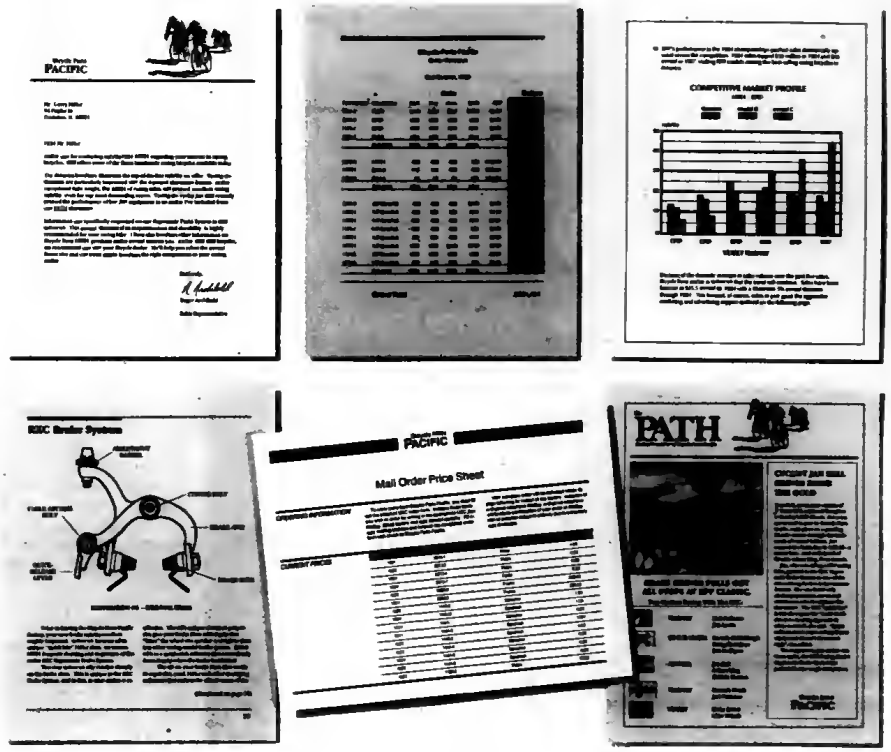

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Newer models avoid IBM price hike

BY JAMES DALY
CW STAFF

PURCHASE, N.Y. — IBM's announcement last week that it will nudge up prices on a wide range of its products by 5% and hoist maintenance agreement charges by 3% is being perceived as a small ripple in a big pond.

The key machines affected by the move — which the company attributed to "a normal business review" — include the System/36, the Personal System/2 Model 30 and the 9370, IBM spokesman Miller Bonner said.

But the announcement bypasses many of IBM's newest offerings, including the 3090 S models unveiled earlier in the week, the Application System/400, the PS/2 Models 50Z and 70, released June 2, and the RT Models 130, 135 and 35B, unveiled last month.

Also excluded are all other 3090 models, the 3090 storage controller and all application software for the IBM Personal Computer, the PS/2 and the RT system. Other product prices or price changes that were announced on or after April 1 are not affected.

"In the long run, it's not going to mean a whole lot," said George DiNardo, executive vice-president at Mellon Bank NA in Pittsburgh, who seemed nonplussed in light of IBM's announcement earlier in the week that it would cut graduated monthly license charges on selected versions of MVS and VM software. "They giveth with the left hand and taketh away with the right and offset both," DiNardo said.

Others added that there are ways of circumventing the increases. "Raising your prices is one thing; making them stick is another," said Robert Hedrick, an analyst at Eppler Guerin and Turner, Inc. in Dallas. "You can raise prices, but you can discount, too. There are ways to back the price back down. And 5% is not that much to cover."

> "THEY giveth with the left hand and taketh away with the right and offset both."
>
> GEORGE DINARDO
> MELLON BANK NA

Other analysts, however, hinted that IBM may be playing on the fact that recent price hikes by companies such as Digital Equipment Corp., Sequent Computer Systems, Inc. and Hewlett-Packard Co. are fresh on users' minds.

But while DEC and HP blamed their increases on the shortage of dynamic random-access memory (DRAM) chips, IBM makes most of its DRAM chips in-house, said P. Martin Ressinger at Duff & Phelps, Inc. in Chicago. "It certainly gives IBM the perfect psychological opportunity to raise their margins," he added.

Hale and hearty?

Others said the price increases, when coupled with fiscal belt-tightening measures such as recently announced worker redeployments, which are expected to result in the departure of some 10,000 employees, are an indication of IBM's fiscal health.

"The fact that they are able to raise their prices indicates that a lot more positive things are happening at the company than their recent stock fluctuations would indicate," said Shao Wang, an analyst at Smith Barney, Harris Upham & Co.

The increases are effective immediately for purchase prices, hourly per-call service rates and systems engineering rates. Initial license charges and one-time charges for program products are effective Sept. 1, while other price changes are effective Nov. 1.

Bonner added that although IBM's Corporate Service Amendment maintenance agreement will increase by 3%, the hourly call rates will go up 5%.

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Philadelphia	Sept. 9	New York	Sept. 16	Hartford	Oct. 6	Detroit	Oct. 20
Los Angeles	Sept. 13	Chicago	Sept. 20	Raleigh	Oct. 7	Houston	Oct. 25
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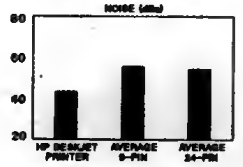

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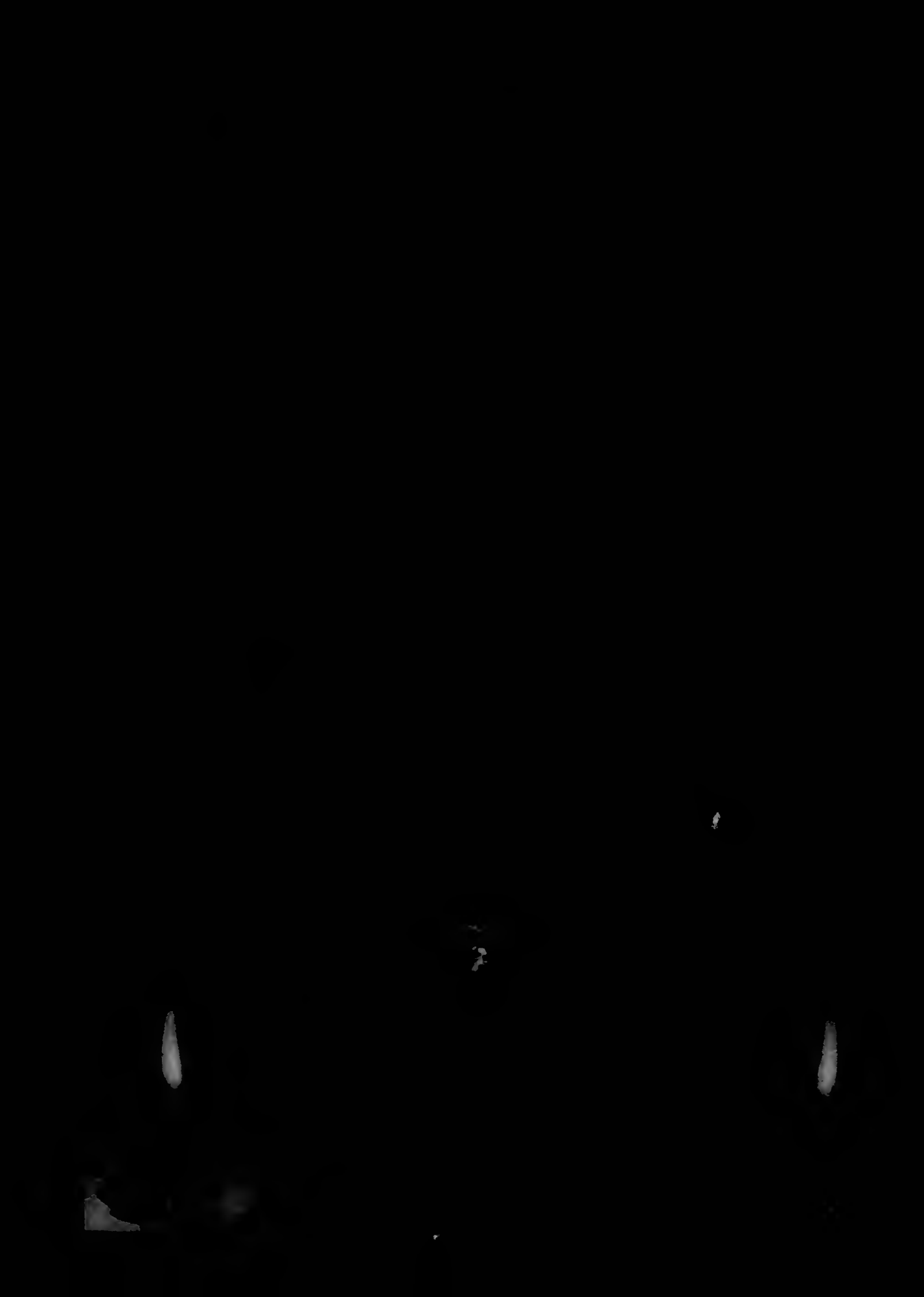

AT&T 605 BCT terminal (left) shown with AT&T PMX/TERM menu. AT&T 630 MTG terminal (right) displays text editing on two hosts, simultaneously.

The secret is the AT&T 600 Series Display Terminal family.

If you've ever been forced to live with two CRTs on your desk just to get the information you need, or have struggled to connect your terminal to a second computer, you'll appreciate the power and simplicity of the AT&T 600 Series Terminals—the first terminals that take full advantage of the UNIX® operating system invented by AT&T.

AT&T 620 MTG terminal (left) supports common business graphics interfaces. AT&T 615 MT (right) is the recommended multitasking UNIX System Administration terminal

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AT&T 630 MTG terminal: Provides dual-host access and down-loadable applications (left); provides high resolution display of engineering or business graphics (right).

In addition, the AT&T 600 Series Terminals offer full PC terminal capability in the UNIX System environment so you can unleash the power of both UNIX System V and MS-DOS* applications for your remote terminal users.

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EDITORIAL

What to believe?

NEW! FASTER! IMPROVED! Now with miracle ingredients!

Those are words you might typically associate with soap powder or sports cars. But they are beginning to sound suspiciously like the marketing claims now being used by major hardware and database management system vendors to tout performance improvements in their products. We have watched as a deluge of vendor-sponsored benchmark tests have hit the market, each purporting to show that one developer's products are faster than another's. The noise level has reached such a pitch that users must be tempted to discard the results as promotional jargon. We can't blame them.

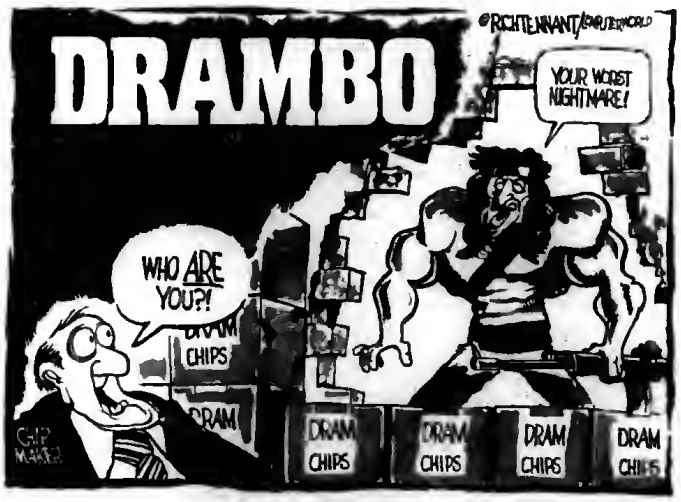
There are several factors at work in this latest swing of the competitive pendulum. For one thing, the playing field has been leveled considerably in the last few years. The DBMS market, for example, has settled on a few major protocols and architectures and no longer spars over whose approach is best. Similarly, hardware makers have rallied around standards such as reduced instruction set computing and portable operating systems and are now turning their attention to see who can tune those components to achieve the best performance.

Second, a relatively small set of benchmark tests has achieved general acceptance. They include the debit/credit, TP1, ET1 and Ramp-C benchmarks and the much maligned million-instructions-per-second rating. Developers can now test their products with the assurance that they are comparing an apple with, if not another apple, then at least another piece of fruit.

Finally, there is the horse race factor. Once a few vendors decided to change the rules by publicizing test results, it was incumbent upon the others to do the same. The problem is that the industry cannot agree on which tests to use. Recent experience shows that even "standard" benchmarks can be tweaked to give one product an advantage. A DBMS benchmark may specify the type of transaction to be executed but doesn't account for the presence of background utilities or the effect of main memory size. Consequently, each vendor's benchmark results are immediately debunked by its rivals. Competition shifts from product features to test conditions.

It would be shortsighted to dismiss the benchmark muddle as simple hype. Vendors are to be commended for submitting their wares to independent scrutiny. But they are doing customers a disservice by sniping at each other over test results. It's time to standardize the standards. Vendors should come together to lay out a set of rules for benchmark tests, certify them independently and then stick to them.

There is good reason for this process to begin immediately. If the current round of benchmark brawling continues, users will throw up their hands and dismiss the claims as too confusing or simply meaningless, which is in no one's best interest. Vendors have done a good job of leveling the playing field so far, but the individual players are still making up their own rules.



LETTERS TO THE EDITOR

Takes offense

In response to Donna Manley's letter to the editor supporting the generic use of the masculine pronoun in *Computerworld* [CW, July 4], I would like to say that I am always offended by being called a man. Women are not female men, and we should not be invisible in CW.

If men were called women throughout the newspaper, would Manley support the term as "acceptable grammar [that] . . . promoted readability?"

Taylor Ross
Washington, D.C.

DB2 pros, cons

I am writing in regard to *Computerworld's* articles and letters regarding IBM's DB2 source code [CW, Feb. 8, April 11 and June 6].

Although there are many third-party vendors interested in obtaining the DB2 source code, there are more with no interest.

Reasons in favor of third-party vendors obtaining DB2 source code include the following:

- Better DB2 internal analysis for non-IBM vendors.
- Effective understanding of DB2 internal modules and interfaces.
- Better treatment of the DB2 system recovery in order to better control any system failures.
- Evaluating the internal DB2 optimizer may allow computer-aided software engineering vendors to simplify access to DB2.

Reasons against obtaining DB2 source code include the following:

- Currently, there are more than 150 non-IBM software products available for DB2/SQL.
- Within the above products, there are many sophisticated performance monitors, fourth-generation languages, application generators, artificial intelligence packages, database design tools and high-performance on-line data retrievals.
- IBM's DB2 user base has been expanding rapidly even though DB2 is a young product.
- Many non-IBM vendors never supply any source code.
- IBM is rapidly bringing new DB2 releases, which can cost a large amount of tedious and non-productive work for third-party vendors.
- In the future, IBM will announce many functions of DB2, embedded in its hardware, which will disallow the use of DB2 source code. Thus, it may not be an advantage to request DB2 source code.

The overwhelming reasons in support of not supplying the DB2 source code to third-party vendors outweighs those against. In other words, it is not as practical or as easy to use as one may think to obtain the DB2 source code.

George E. Coronado
DB2 Consultant and Publisher of "DB2 & SQL/DS Users Bulletin"
New York

This week in history

July 31, 1978
Satellite Business Systems pledges support for the Communications Act of 1978, especially if it means that monopoly carriers such as AT&T "will not have the same ability they do today to dominate the interstate telecommunications market through anticompetitive practices."

Aug. 1, 1983
After meeting heated criticism in Congress and the U.S. Federal District Court, the Federal Communications Commission reduces local exchange network access charges by ruling that users will pay $3.5 billion more in 1984 instead of the $4.8 billion increase it had proposed.

What's wrong?

The article "Silverlake not an easy solution?" [CW, June 20] enumerates three compromises that are compromises only when viewed through mainframe-colored glasses.

I would bet *Computerworld* applauded when IBM's MVS/ESA expanded the addressability of its 370s and made initial moves toward single-level storage — features fundamental to System/38 and the Application System/400. But apparently, the new mid-range architecture will appeal to mainframe users only when it clones their 30-year-old architecture. Are CW's objections only because "we don't do it that way on the mainframe," or is it that mainframe users now feel threatened by a superior architecture?

Paul E. Halberstadt
Halberstadt & Co.
Charlotte, N.C.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.

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Liberating your dormant creativity

MIS execs should prepare now for the fall season

JOHN KIRKLEY

It'a summer. Time to relax a little, loosen up, maybe consider making a few changes.

Perhaps before going on vacation is the right time to begin thinking about trying out some creative ideas in your MIS department — a few new ways of doing things that you can initiate in September when, psychologically, we all begin to gear up for that busy period between Labor Day and Christmas.

Why think about change now? Why not wait until September, when you return to work all rested and charged up, ready to go?

Like the sands of time

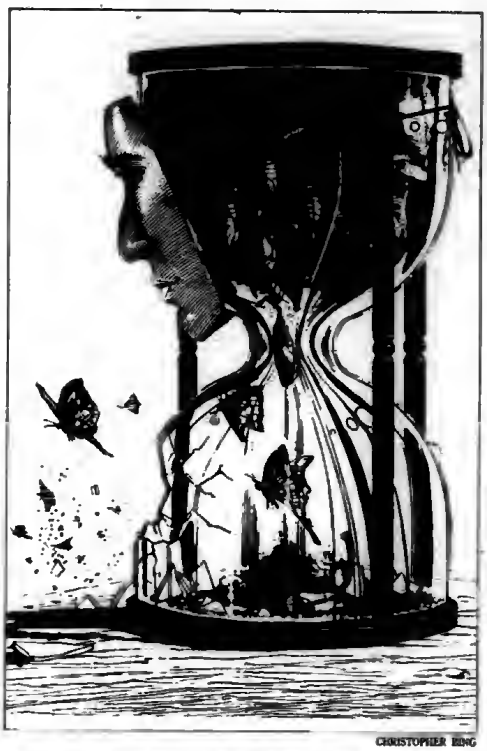
Creativity is an interesting process. It takes time. It can't be hurried. Ideas have to gestate, to sift through the subconscious before they can be fully realized.

First, I have assumed that you are open to change. That may be untrue. One of the tired cliches about MIS directors and DP managers is that they are resistant to anything new. Among the other misconceptions are that there are hordes of DP managers still fighting the personal computer revolution; that there continue to be myopic DP managers who will not consider buying equipment from any vendor but IBM; and that there are still MIS directors who view the spread of end-user computing with the same fondness that citizens in the Middle Ages viewed the black death.

However, let'a ignore the proponents of negativity and make the assumption that come this fall, you'll be ready to shake things up a bit. Taking new approaches to old problems, restructuring work assignments, changing ways of handling conflict resolution, finding a fresh approach to creating an information architecture that reflects the goals of your corporation — it doesn't matter much what your particular project is, the process remains fairly constant.

The first stage is preparation, moving toward something yet to be defined. Suppose you have a vague need to solve a problem. Trying to apply a rigorous structure at this intuitive and exhilarating stage will stultify your thinking.

The next period is often one of frustration, a time to worry about the problem and exhaust various potential solutions. This is the "beating your head against the wall" period, and it'a usually very necessary. However, once your head has achieved a certain degree of flatness and your ears are ringing satisfactorily, it'a a good time to back off and let your subconscious begin to work.



CHRISTOPHER RING

Robert Fritz, a musician and teacher of a unique approach to the creative process, describes "structural tension" in his book, *The Path of Least Resistance*. Fritz asks you to visualize the solution to your problem as if it already existed.

Next, you form a clear assessment of the current situation, including attitudes and emotions you have that may hinder your movement toward a solution.

Then — and here is where you create structural tension — you simultaneously compare the results you wish to achieve with the current situation and note the discrepancy between the two.

At this point, the subconscious comes into play. After making the comparisons, you drop the subject and go fishing, work on something else, take a shower, sing a song — do anything but worry about the problem. Now your subconscious is busily working away, sifting, sorting, comparing, looking at solutions, remembering things that your conscious mind noted and forgot years ago.

And then, one day . . . illumination! The problem is identified, the solution becomes clear.

But wait. You're far from done. For some people, accepting the solution — in other words, accepting success — is difficult. The solution may mean new ways of doing things, the replacement of old habits or conflict with other people who have a vested interest in your behaving in old familiar ways. Change can be unsettling — even dangerous.

Environmental pressure

Innovation, according to Max DePree, chief executive officer at Herman Miller, Inc., can flower only in an environment in which people are open to change and can cope with the conflicts that are inevitably generated.

A seemingly simple but often difficult element of creation is developing an atmosphere in which it'a OK for everyone to reach out and do something different and better.

Too often, DePree says, supervisors feel threatened by subordinates who are striving for excellence.

As you put down this paper and open up that travel brochure, give some thought to the challenges of August that can be addressed in September. If you decide to unleash your creativity and rock the boat — even just a little — it could make for an interesting fall.

Kirkley is a computer industry writer, editor and consultant based in Warwick, N.Y.

Wanted: a better way to handle plagiarism

JOHN BARNES

The Apple suit against Microsoft and Hewlett-Packard threatens disaster, as has been pointed out by many people. It might imperil the dominance of the American software industry, it could open the door to all sorts of harassment litigation, and it could well cost man-decades of expensive engineering talent tied up giving testimony.

And all of these possibilities might be the smaller effects. The issue is more important than many have imagined. Apple is not suing over the appearance of a few icons.

If that were the issue, the parties to the suit would have settled quickly and painlessly out of court long ago. The argument, in essence, is that one can have a long-running right to a good idea — not to a specific implementation of that idea, but to the idea itself.

It's easy to think of silly examples. Could J. R. R. Tolkien'a heirs sue everyone who exploits Northern European mythology and Christian theology for commercial purposes? Remember, it never made anyone a dime until he did it.

Could Leo Szilard sue the British Admiralty for return of his pre-World War II patent on the atomic bomb and then halt all nuclear testing until everyone paid back royalties? (Actually, it might be worth a try . . . .)

Seriously, the gist of the present law is that a good idea is just like an oil well. You find it, you drill, you sell the oil — and nobody else is allowed to cross-drill into your pool of oil.

The purpose of treating oil in this way is not because it is the only moral way to do it or because it'a divinely ordained. Only one reason underlies the system: It produces a lot of oil. People have incentives to look for it and to pump it when they find it, because whatever they find first is theirs.

Add it up

But there'a a critical difference between oil and ideas, and between valuable physical property and valuable intellectual property. Oil in a pool is ultimately zero-sum: Whatever you pump from my pool, I will not pump. Your loss is my gain, and vice versa.

Basic information and ideas — meaning fundamental concepts, not specific implementations — are non-zero-sum. No matter how often you use my idea, I still have it, and I can still use it.

Furthermore, it is possible, and even likely, that your enhancements to my idea will increase its value to me.

In general, the more an idea is used, the more valuable it becomes and the more it tends to improve. This fact is just what the Apple suit, and the law in general, fails to address.

In a zero-sum situation, granting a monopoly in return for a discovery leads to lots of discoveries.

In a non-zero-sum situation, it restricts the effort to make further discoveries. That'a just fine for the original discoverer, whomever a court may decide that is. But for the rest of us, it'a a dead loss.

If a researcher working for HP happens to make the next major breakthrough in Mac theory, none of us will gain from it, not even Apple. Furthermore, as the law stands, we lose either way.

Suppose Apple'a case is absolutely airtight. (And if this case isn't, some future one will be. The question will not just go away.) Then, if Apple wins, instead of three or more teams working on a powerful concept with the resulting competitive dialogue leading to fast evolution, there will be just one team.

If the defense wins, there will be far less incentive for anyone to develop new ideas, since there will be a green light for just cloning the competition and letting the originator pay for the bulk of research and development.

So as the law stands now, everyone loses. There has to be a better way. A new system needs to meet two requirements:

- Those who come up with new ideas ought to be paid for them — and the more people who use the idea, in whatever form, the higher the payment should be.
- Anyone should be able to take a good idea, make it better and get paid for that improvement, regardless of who came up with the original idea.

The present system doesn't deliver either. At best, it might be able to deliver one, and we desperately need both.

Barnes is the Pacific Northwest area manager for ADG, a high-tech marketing organisation based in San Pedro, Calif.

BOOK REVIEWS

Does technology allow greater control over workers?

The Political Economy of Information
Edited by Vincent Mosco and Janet Wasko

While much of this anthology of essays delves into sociological implications of information technology that are beyond the daily concerns of the typical MIS manager, Andrew Clement's contribution, "Office Automation and the Technical Control of Information Workers," brings into clear focus the social ramifications of the technology as it pertains to office work.

Clement, an assistant professor of computer science at York University in Toronto, looks at the impact of technology on middle managers, professionals and technicians. His central question is whether technology will lend senior management greater control over these groups, as it previously has brought management greater sway over factory and clerical workers.

Middle managers and their professional peers in the engineering ranks might push for greater end-user autonomy, but Clement sees senior management backing a centralized host and terminal network. He contends that in the evolution of corporate management, technical superiority and economic efficiency often take a backseat to the exercise of control.

Just as the selection of an approach to office automation carries implications for the relative power of middle and senior managers, Clement also believes the reverse is true, and decisions will reflect the superior position of senior management. "It would be extraordinary," he writes, "if a technology as rich in opportunity for extending control as office automation were not seized upon to exploit this aspect of its potential, even at the cost of some loss of productivity."

Clement's essay tempers the anticapitalist tone of the introduction by the anthology's editor, Vincent Mosco, a professor of sociology at Queens University in Kingston, Ontario. Mosco dwells on the potential of the corporate use of information technology to eliminate or downgrade jobs, control workers and consumers and exploit the people of less developed countries.

In another essay addressing workplace concerns, Jorg Becker, a political science professor at Technical University in Darmstadt, West Germany, predicts slow development of corporate telecommuting, a pace he welcomes because it will accommodate development of relevant social policies.

Paperback, $17.50, 315 pages, ISBN 0-299-11574-7, by The University of Wisconsin Press, Madison, Wis.

DAVID A. LUDLUM

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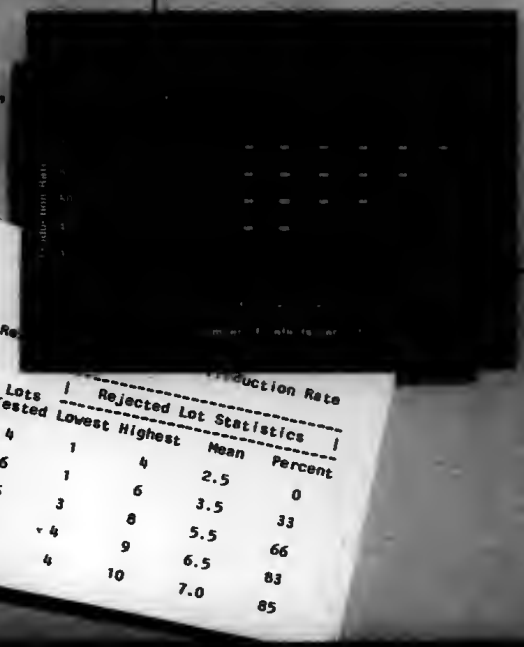

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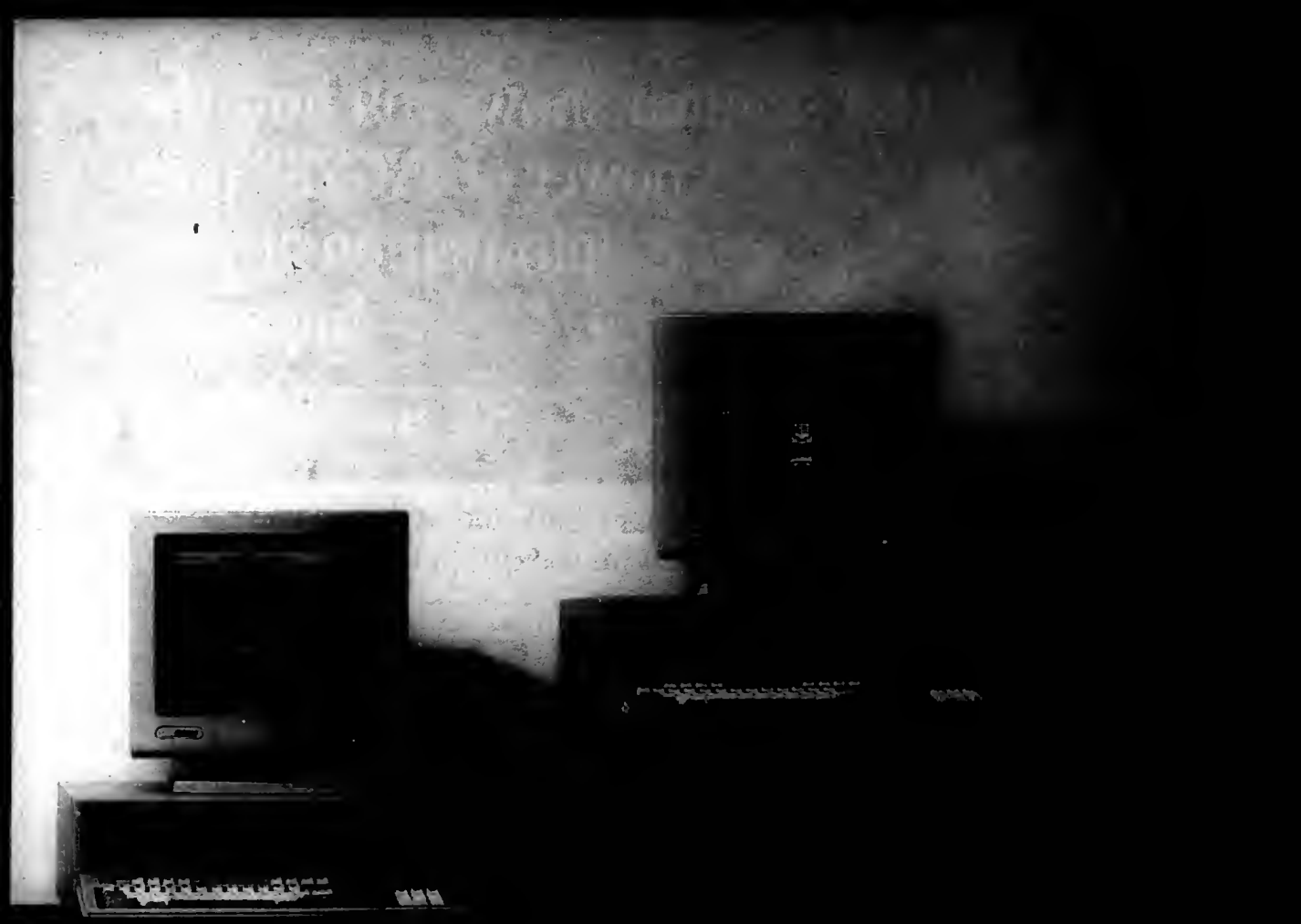

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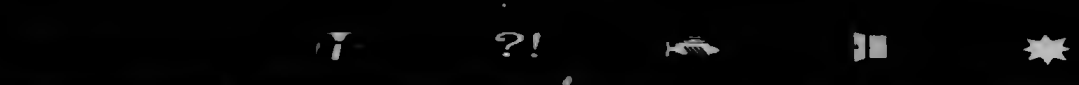

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SOFT TALK

Charles Babcock

On your mark, get set, foul!

Oracle Corp.'s claim of shattering records for transaction processing includes a curious contradiction: Right after Oracle's stated "world record for performance" of 265 transaction/sec., it noted that the results "have been audited and verified by the highly reputable and expert firm of Codd and Date Consulting Group."

But when you turn to the auditor's report, no such result appears. As a matter of fact, the report isn't available yet, although the brief, two-page summary signed by Tom Sawyer of Codd and Date was labeled "Auditor's Report" by Oracle. Sawyer signed off on the DEC VAX and Sequent benchmarks; possibly for that reason, their results remain somewhere below the stratosphere. But whoever audited the mainframe results that make Oracle look better than Tandem and IBM has yet to step forward.

But wait — there's another contradiction. Oracle states "the industry-standard TP1 benchmark" was used in achieving its results. As Omri Serlin, Rich Finkelstein, Frederic With-

Continued on page 28

DEC storage upgrade welcomed

ANALYSIS

BY STANLEY GIBSON
CW STAFF

Digital Equipment Corp.'s long-awaited announcement of its RA90 disk drive and SA600 storage array was greeted warmly by analysts as symbolizing a resurgent DEC as a peripherals manufacturer.

Anticipated for two years, the direct-access storage device (DASD) is an indispensable component of DEC's recently announced transaction processing offerings, called DEC TP. The SA600 contains either four or eight RA90 drives.

Using thin-film technology on both the heads and platters, the RA90 offers an average seek time of 17.5 msec and 1.2G bytes of storage, both better than any previous DEC disk. Stronger performance, coupled with improved reliability, could overcome what many have called a weakness of DEC's in the transaction processing arena — the firm's lackluster storage devices.

"I'm sure it will be reliable and they will be able to make it. It's a long-delayed program, eagerly awaited by DEC users for many years," offered James Porter, president of Disk/Trend, Inc. in Los Altos, Calif.

Peter Coriasco, vice-president of the technical engineering group at Bankers Trust Co. in New York, a major DEC account, said he will soon move to the new drives despite early reliability problems on previous DEC storage devices.

How DEC's RA90 measures up

New direct-access storage device carries DEC hopes in transaction processing market

	RA90	IBM 3380 Model E	IBM 3380 Model J	IBM 3380 Model K
Capacity (in bytes)	1.2G	5.04G	2.52G	7.56G
Average seek time	17.5 msec	17 msec	12 msec	16 msec
Peak transfer rate (in byte/sec.)	2.8M	3M	3M	3M
Maximum storage per controller (in bytes)	38.8G	80G	40G	120G

INFORMATION PROVIDED BY IBM AND DIGITAL EQUIPMENT CORP.
CW CHART

Jumping right in

Coriasco said he is convinced that the quality of the SA600 will be good from the start. "We're not going to wait and see." Bankers Trust currently uses a large number of RA82 disk drives.

Porter suggested the long delay in announcing the drive and its rapid availability upon announcement indicate that bugs have probably been worked out. The four-drive model will be available in 60 days; the eight-drive version will be available in 90 days, DEC said.

Continued on page 29

Stuck in a graphic jam

Supercomputing tools getting mixed signals

BY J. A. SAVAGE
CW STAFF

SAN JOSE, Calif. — Although there are advertising claims to the contrary, some analysts think graphics supercomputers have yet to realize their potential to present dynamic photo-realism. Much of the problem lies in a hardware bottleneck, and there is a lack of software for machines on the market.

"Users' perception is stimulated by the pictures they see in magazines," said Michael Burwen, president of the Palo Alto Management Group, Inc., at the Dataquest, Inc. Superperformance Computing conference held here recently. "The average user doesn't realize that the ones who make the magazine pictures don't know a thing about computational fluid dynamics," a real-world application.

Burwen said the graphics in vendor exhibits and advertising often takes weeks to create. A graphics display showing water flowing over a ship's propeller, for example, cannot be easily changed to accommodate a slight tilt in the angle of the propeller, he said.

One of the major restrictions in getting the performance promised out of a graphics supercomputer, said Brad Smith, a Dataquest analyst, is the bandwidth of the system bus in the workstation and the speed of the local-area network connecting the number-crunching CPU to the graphics engine.

The connection between the CPU and graphics terminals on a LAN is "horrendously slow," he said, with the throughput between them averaging about 125K byte/sec.

On a workstation level, the bandwidth averages about 20M byte/sec., and on the workstation at a graphics supercomputer level, the bottleneck between

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Inside

- Prime candidate for AS/400 takes wait-and-see attitude. Page 25.
- VAX version of Qwiknet bows. Page 25.
- Sorbus offers repair, refurbishment for IBM 10SR. Page 30.

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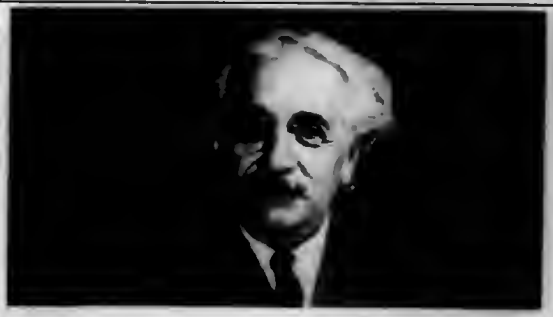

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FOUNDATION

Memorex offers tape subsystem

BY STANLEY GIBSON
CW STAFF

TULSA, Okla. — Memorex Telex Corp. recently unveiled a 5400 tape library subsystem for use with its 5480 tape cartridges, the firm's equivalents of IBM's 3480s.

The product, the result of a collaboration between Fujitsu Ltd. and Memorex Telex, is the second of its type on the market, joining a 3480 tape library offered by Storage Technology Corp.

David Vellante, a storage systems analyst at International Data Corp., said the two vendors are aiming at different market segments, with Storage Technology targeting the high end and Memorex Telex the lower end. He said IBM has a tape library product in development but that it is unclear whether that product will be offered.

Each 5400 Automatic Tape Library machine has two robots, one of which can take over if the other fails. The 5400 library can be configured with four to 16 transports. It can have four control units, each running at 4.5M byte/sec.

The subsystem uses a linear design, incorporating a track along which two automatic accessors travel. The track is bordered on both sides by a honeycomb-like structure containing the cells into which cartridges are stored by the accessors. The cartridge tape drives and their controllers are contained in cabinets behind the rear row of cells.

The 5400's capacity ranges from 658 to 5,152 cartridges, or 130G to 1,030G bytes. It is priced from $370,000 to $930,000, including drives, controllers and software.

Library Management Software, which drives the library, resides in the CPU.

Library open overseas

The product is currently in use in Japan, operating with Fujitsu processors. More than 100 units are installed there, Memorex said. The 5480 currently runs only with the Fujitsu version of IBM's MVS operating system.

When the library debuts in the U.S. late this year, MVS/SP and MVS/XA support will be available, a Memorex spokesman said.

Data compression, currently supported on Memorex Telex 5480 cartridges, will also be available on the 5400 tape library at a cost of $12,500 per control unit, the vendor said.

Willamette looks for unifier

IBM shop wants to consolidate but needs more proof of AS/400's worth

ON SITE

BY J. A. SAVAGE
CW STAFF

PORTLAND, Ore. — Mike Clark is mad at IBM. He has a 20-by 20-foot computer room on the 38th floor of a downtown high rise, and IBM has sold him boxes that are half-empty, with space for upgrades. The room is so crowded that engineers cannot get the computers' doors open to work on them.

"There's no reason to have systems that take up this much space," Clark stated. But his anger is not a good enough reason to switch vendors.

Clark, MIS manager at Willamette Industries, Inc., a wood and paper products manufacturer, is a prime IBM Application System/400 candidate. Most of Willamette's headquarters systems are a mixture of incompatible IBM mid-range machines, including two System/36s, one System/38 and an 8100. Clark's shop also includes a lone representative of IBM's 370 architecture, a 4381 Model 22. Six additional 8100s and two System/34s add to the mix in different locations.

Clark has a mandate to reduce the number of systems. The AS/400, which is aimed at unifying the System/36 and 38 hardware lines, is a logical choice to help simplify this hodgepodge and increase its connectivity to the 370 world.

"But the plan at the moment is to investigate the system further once it comes out and real people are using it," he said, discounting vendor hype.

Time to renovate?

The mixed architecture dates from 15 years ago. It is left over from a time when the paper division was managed separately from the wood products division.

"With the amount of programs you have, [the hardware mix] doesn't change overnight," Clark said. "We're working toward at least one or two systems, instead of the four currently in the computer room."

There are 26 computers in the company, including those in the headquarters office, and about 400 IBM Personal Computers and clones. Of the multiuser systems, 13 are System/36s and two are System/34s distributed across the country. The remainder are 8130s, primarily in the Pacific Northwest.

The single System/38 was bought in October 1987 to run the specific application of workers' compensation. That machine has yet to go live because

Willamette's Clark

of massive changes in the system software, but Clark said he expects it to be working by the end of this month.

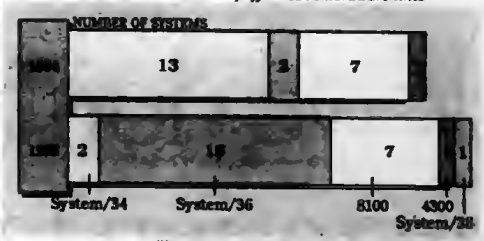
In the short term, Clark anticipates replacing the System/34s with 36s, but he said he doubts he will replace the System/36s until IBM withdraws support for them.

"Our basic problem is that our 3X computers are 100% RPG II and our 370 system is ba-

Continued on page 29

Mixed hardware

Willamette Industries seeks to simplify its IBM hardware lines



INFORMATION PROVIDED BY WILLAMETTE INDUSTRIES, INC.
CW CHART

SOFTWARE NOTES

Tool lets PCs answer Cobol calls

Realia, Inc., a Chicago producer of Cobol compilers, is now offering a product that allows Cobol programs with calls to the mainframe IBM IMS/DB and DL/1 databases to run on an IBM Personal Computer, PC XT, PC AT or Personal System/2. The $995 product, Real DL/I, allows mainframe Cobol programs to be compiled and run on a PC by providing emulation of the mainframe database. Real DL/I is an acquired product developed by Softsphere, Inc. in Aurora, Ontario.

Walker Interactive Systems in San Francisco last week said it has provided IBM DB2 support for its mainframe financial packages, including Management, Budgeting and Accounting general ledger; Accounts Payable Management; Purchase Order Management; and a range of productivity tools called Strategic Management Systems.

MSA Advanced Manufacturing, Inc. in Atlanta has moved six of the material management modules of its manufacturing resource planning system to Hewlett-Packard Co.'s HP 3000 Series 900 minicomputer line. The reduced instruction set computing processor offers a 50% improvement in the modules' runtime, MSA spokesmen claimed.

Fujitsu Ltd. in Japan has joined the X/Open Group, a San Francisco-based organization for vendors attempting to establish a common application environment. The group already includes Digital Equipment Corp., HP, NCR Corp., AT&T, Unisys Corp., Sun Microsystems, Inc., Nixdorf Computer Corp., Ing. C. Olivetti & Co., Siemens AG, Philips Information Systems, Inc. and Nokia Corp. Finland.

Prime Computer, Inc. and **Progress Software Corp.** have announced that the Progress fourth-generation language and database management system is available on Prime's EXL family of Unix-based supermicrocomputers. The firms also signed a worldwide joint marketing agreement.

Software 2000, Inc., a supplier to the IBM System/38 market, has signed an agreement with **Arthur Andersen & Co.** to market Software 2000 financial and human resource applications with Arthur Andersen's manufacturing and distribution applications.

VAX gets project manager

BY NELL MARGOLIS
CW STAFF

CAMBRIDGE, Mass. — Project Software & Development, Inc. (PSDI) is climbing aboard the workstation bandwagon with a VAX version of its Qwiknet Professional project management package, originally developed for the IBM Personal Computer.

Introduced in April 1987, Qwiknet Professional represents the company's effort to enter the micro market without departing from a 20-year-old record of delivering a function-rich system to hard-core technologists, according to founder and Chief Executive Officer Robert Daniels. The package features an interactive interface that lets users perform instant "what if" analysis and provides critical path, time-limited, resource-limited and priority-scheduling options.

Qwiknet Professional can manage up to 250 projects.

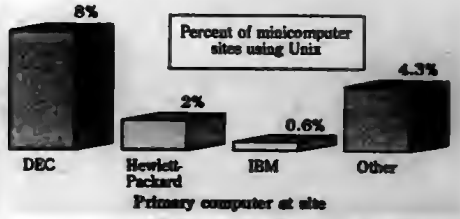
The Digital Equipment Corp. VAX version reportedly will be available next month. It is aimed at users who are not full-time project managers but who spend anywhere from 10% to 30% of their time on project management tasks, according to Dennis Martineau, PSDI's marketing vice-president.

Continued on page 28

Data View

Minis not high on Unix

Only 8% of DEC VAX sites run Unix, even though DEC customers load others in Unix use



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HARD BITS

NASD buys Stratus systems for new market

Continuing its inroads into the securities trading market, **Stratus Computer, Inc.** recently sold several of its systems to the National Association of Securities Dealers, Inc. (NASD).

The systems will be used in a new international private placement market being developed by NASD. Using the NASD Automated Quotations, or NASDAQ, system as its model, Washington, D.C.-based NASD plans to build an automated system for large investors to trade unregistered securities of major domestic and foreign issuers. The project, called Portal, is slated to be working by the end of the first quarter of 1989.

Separately, Stratus announced that it has formed a division to implement and market Pick Systems' Pick operating system on its XA2000 Continuous Processing computers. Pick is popular in on-line multiuser database applications.

Stratus, a vendor of fault-tolerant computers, said it will integrate Pick with its VOS operating system, allowing Pick users to bring some 3,000 Pick applications to the Stratus XA2000 systems.

Chromatics, Inc. said it will supply graphics engines for the combat workstations in the next generation of U.S. attack submarines. **Librascope Corp.**, a subsidiary of **The Singer Co.**, will incorporate the engines into its Combat Situation Display Consoles for the SSN-21 Seawolf submarines. Chromatics and Librascope recently completed a licensing and technology transfer agreement that covers future U.S. Navy programs in addition to the SSN-21 project.

Control Data Corp. said it recently delivered its first Artecs II Energy Management System to the Omaha Public Power District. The Artecs II system is used in a new tornado-resistant energy control center in Omaha. The energy management system uses dual CDC Cyber mainframes and is intended to coordinate the power district's generation, transmission and distribution operations.

Babcock

CONTINUED FROM PAGE 23

ington and other independent experts have been saying, TP1 is still loosely defined and there is no TP1 standard. Serlin is trying to establish such a standard through a Debit/Credit Council, but Oracle refuses to join.

As if we weren't confused enough, Oracle President Lawrence J. Ellison has started talking about Oracle's claimed TP1 benchmarks as a "Debit/Credit benchmark, absolutely the same as Tandem's."

We thought Debit/Credit was our one clear transaction processing benchmark, defined in an April 1985 *Datamation* article and documented by Tandem in March 1987. There is nothing in the Oracle performance report that indicates it included a communications front-end or did mirrored journaling, as would be required in a Debit/Credit test. Is Lawrence J. Ellison confused?

But hold on a minute — Oracle's claimed TP1 also contains a major contradiction. It has been agreed by all previous implementors of TP1 that the transaction begins with a simulated terminal network generating transactions.

In Cullinet's test of IDMS/SQL, the transactions were generated on the same machine that was running the benchmark. Sybase avoided this overhead by running the transaction-generating application on a separate VAX and feeding the simulated transactions into the benchmark machine. Oracle criticized Sybase for that step at the time, but in its mainframe tests, Oracle has carried the maneuver to its ultimate illogical step: It measured transactions fired off in main memory without any attempt to mimic a network.

"Oracle has gone to such an extreme in what they have done. It had no on-line flavor whatsoever," Serlin says.

Let's try to get this straight. In the Oracle version of a benchmark that simulates banking transactions, all of the bank's customers, tellers and branches are located inside the bank's central computer.

Not surprisingly, analysts on Wall Street found this to be an acceptable test. "I was impressed with the quality of the benchmarks," Scott Smith of DLJ Securities told *Computerworld* before the flight on the British Airways Concorde arranged for the announcement.

"The benchmarks were plentiful, thorough and well documented," said Roxanne Googin, an analyst at Needham & Co. in New York.

How not to judge a benchmark

Yes, ladies and gentlemen, it was a thick document, but we should read it as well as weigh it.

We should also read the full auditor's report if, indeed, it ever becomes available. An auditor reports his exceptions as well as the aspects of the test he can verify. Sawyer's summary letter states simply, "These attributes of the benchmark were verified," listing seven items.

The summary is silent on exceptions. When Sawyer audited the widely hailed Tandem benchmark in 1987, he was able to find exceptions, and I suspect his final report on Oracle will read differently from this summary.

Until that report becomes available, I would urge Oracle customers to ignore the alleged TP1 benchmarks and measure Oracle with their own applications. Any real-world results will be better than getting taken on a flight of fancy.

Babcock is *Computerworld*'s technical editor.

VAX

CONTINUED FROM PAGE 25

Qwiknet VAX adds a "bookmark" multitasking feature, for instance, which gives users single-keystroke transit between project management applications and DEC VMS applications such as electronic mail.

Qwiknet VAX can schedule 16,000 separate activities — more than three times the number handled by its standalone, micro-based counterpart.

At Evans & Sutherland, management systems development manager Leon Ottley said he is looking forward to the advent of Qwiknet VAX. The Salt Lake City-based computer graphics hardware and software manufacturer is already a PSDI customer; it uses the company's Project 2 project management package to schedule, plan and control projects with durations ranging from months to five years, involving work teams of three to 60 people.

When the PC version of Qwiknet Professional came out, Ottley said, his firm started using it for front-end project planning. "We wanted to get the actual project managers involved in doing the planning, instead of having it done by a central committee."

Growing pains

One of the biggest challenges is accommodating projects as they grow, Ottley said. "With Qwiknet Professional, we've been doing summary-level activities and can build in details underneath."

Having Qwiknet available on the VAX will further Evans & Sutherland's plan of putting together a fully integrated project management system, Ottley added. "With 125 VAXs, a lot of them workstation-size, we've got a lot of people whose primary access to the system is via a VT 220 or 320," he said.

One drawback is that "Qwiknet involves a much longer learning cycle than other project management products," a downside that might loom larger when Evans & Sutherland attempts to "train some absolute novices," he cautioned.

Qwiknet Professional for the VAX will be priced at $18,900 for a four-user package and $8,600 for each subsequent user added. Prices include training and one year of maintenance.

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Upgrade

CONTINUED FROM PAGE 23

Tom Burniece, business manager for large disks at DEC's Colorado Springs facility, said the long development time was used for extensive performance testing. He said hundreds of disks have been field-tested for a number of months. In those tests, he said reliability figures exceeded those of the RA82 disk drive, DEC's previous high-end DASD.

Burniece pointed out that the RA90 is the first DASD produced by DEC in which the vendor made both the disk platters and heads. Previous disks have had heads and platters made by outside suppliers. Thus, the improved reliability is even more significant for DEC as a peripherals manufacturer, he added.

THE LONG DELAY in announcing the drive and its rapid availability upon announcement indicate that bugs have probably been worked out.

The SA600 is offered in two configurations, with four RA90 disk drives or eight. The SA600 arrays were designed to connect to an HSC70 controller or any one of a number of other DEC controllers. As many as four SA600 units can be attached to a controller, allowing up to 38.8G bytes of storage per controller.

David Vellante, an analyst at Framingham, Mass.-based International Data Corp. (IDC), also praised the modular design of the drives, saying that they are composed of a number of field-replaceable units. That, combined with DEC's Vaxsim Plus software, an expert system-based program that predicts possible failures, is a strong selling point. He said a user can be warned of a potential disk failure by Vaxsim Plus and then easily replace a modular part that may be about to malfunction.

He also said that according to IDC figures, DEC has significantly improved its mean time between failure rate to the point where its currently available storage devices, such as the RA82, are as reliable as those of OEMs like Fujitsu America, Inc., Control Data Corp. and others.

Vellante reserved criticism for the price of the drives, however. "This is going to give competitors plenty of room," he said, and Disk/Trend's Porter agreed. "The price is not better than IBM's, but when DEC discounts are considered, it is competitive," Porter said.

The SA600 is priced at $225,000 for the 9.7G-byte configuration and $125,000 for the 4.8G-byte configuration. The storage array comes with a one-year hardware warranty, including on-site service and Vaxsim Plus.

Graphic jam

CONTINUED FROM PAGE 23

the display part of a graphics supercomputer and its CPU and virtual processing unit decreases even further as the bandwidth is increased to about 600M byte/sec. However, the number-crunching CPU for all configurations is still connected to workstations via a LAN with the same data flow impediments, Smith said.

Signals crossed

The barrier to increased growth in the graphics workstation industry is that users are not giving clear signals to vendors about what they need out of the machines, Burwen said. The machines exist, looking for an application into which they can be shoehorned. The graphics workstation market amounts to $3.6 billion this year, Dataquest estimated.

Another weak spot, Burwen said, is the lack of a systemswide approach.

Workstations, networks and front-end machines of all different flavors are being patched together by users, he said.

"It's a bleak picture, but there are glimmers of hope," Burwen stated. "Graphic supercomputers may foreshadow a new generation of truly capable systems."

Willamette

CONTINUED FROM PAGE 25

sically assembler," Clark explained. "It's not a typical mainframe shop when you don't have any Cobol programs. We have seven Fortran programs."

Old code

Clark is trying to get rid of the assembler programs because the code is anywhere from 15 to 17 years old.

"It's just been patched and patched and patched. We only have one package in the entire company that is not homegrown," he said in reference to the workers' compensation system.

Clark said he will incorporate Cobol in the near future because of its portability to the AS/400s.

The opportunity to buy both packaged applications and computers in smaller packages is within Clark's grasp. In the meantime, Willamette's MIS staff members squeeze in between oversized boxes to get to the printers and monitors.

"In two years we'd probably be able to dance in here. That's my goal," Clark said.

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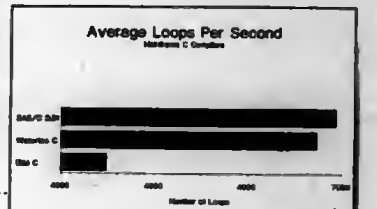

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NEW PRODUCTS — SYSTEMS

Processors

Cheshire Engineering Corp. has announced the XP-11 32-bit coprocessor, which was designed for Digital Equipment Corp. PDP-11 computers operating under the RT-11 or TSX-Plus operating systems.

The product reportedly installs in any available DEC Q-bus or Unibus slot and assumes the appearance of a direct-memory-access peripheral. All PDP-11 devices, files and services are transparently available to the image executing on the XP-11. To move an application program to the XP-11, the user must recompile the source code with a C compiler.

The XP-11 equipped with 4M bytes of on-board memory, a 64K-byte cache memory and a Weitek 1167 Floating Point Accelerator costs $11,900.

Cheshire Engineering, Suite 201, 650 Sierra Madre Villa Ave., Pasadena, Calif. 91107. 818-351-5493.

Data storage

Sorbus, a Bell Atlantic Corp. company, will offer repair and refurbishment services worldwide for the IBM 10SR 200M-byte hard disk drive. The 10SR is used in the IBM System/36 minicomputer.

The average turnaround for repairs, excluding shipping time, will be 14 days. The company is providing a 120-day warranty on 10SR repairs and has invested in the development of a servo writer to ease the process of reformatting and reprogramming damaged drives.

All repairs will be performed on a ship-in, mail-in basis.

Sorbus, 50 E. Swedesford Road, Frazer, Pa. 19355. 215-296-6000.

I/O devices

Versatec has announced HP-GL pen plotter emulation capabilities for its 8500 series of electrostatic plotters.

According to the vendor, Hewlett-Packard Co. HP 7585 and 7586 pen plotter users can now plug in a Versatec 8500 series electrostatic plotter with HP-GL code to produce fast and consistent drawings. No additional hardware or software changes are required. The new option allows the 8500 series to accept HP-GL data via an RS-232C serial interface or a Genicom Corp. Centronics parallel interface.

Two models are available. The **8524** plots on 24-in.-wide media and costs $19,900, and the **8536** plots on 36-in.-wide media and costs $24,900. Both plot with 200 point/in. resolution at 1 in./sec.

The HP-GL option for field upgrade costs $995.

Versatec, 2710 Walsh Ave., Santa Clara, Calif. 95051. 800-538-6477.

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NEW PRODUCTS — SOFTWARE

System software

Alliant Computer Systems Corp., a manufacturer of parallel-vector minisupercomputers, and **Analogy, Inc.**, a vendor of systemwide, circuit-level simulation software, have announced a port of Analogy's Saber systems simulator to Alliant's FX/Series systems.

The new version of Saber reportedly offers enhanced performance for a range of modeling devices, including products such as sensors and actuators, and can operate in any technological environment, the vendor said. The software is available immediately.

Pricing information is available from Analogy.

Analogy, P.O. Box 1669, Beaverton, Ore. 97075. 503-626-9700.

Compuware Corp. has released **Version 4.3** of its **CICS Playback** system package, designed for testing software before it is delivered to the user.

The release reportedly incorporates an IBM ISPF interface to batch utilities and has updated security features, including terminal, transaction, function, file and script authorization.

CICS Playback is priced from $13,500 to $39,800, depending on CPU.

Compuware, 31440 Northwestern Highway, Farmington Hills, Mich. 48018. 313-737-7300.

Applications packages

B. I. Moyle Associates, Inc. has announced **Odistrak**, a separately priced feature for the IBM DOS/VSE version of Bim-Odis.

Bim-Odis software is said to provide comprehensive screen displays of the current status of operational IBM CICS systems, including analytic displays used for CICS problem determination.

The Odistrak module offers a means of logging statistics and problem occurrences as well as generating reports based on the recorded information for both CICS and Bim-Odis operations. Statistics are recorded for terminals, transient data, files, programs and other functions.

Odistrak for DOS/VSE costs $1,200 for a permanent license, $600 per year or $60 per month. Bim-Odis and CICS/DOS 1.7 are a prerequisite for operation.

B. I. Moyle, 5788 Lincoln Drive, Minneapolis, Minn. 55436. 612-933-2885.

MICRO BITS

Douglas Barney

Windows OK by Uncle Jim

Windows is in the eyes of the beholder. According to popular wisdom, Microsoft's Windows slurps canal water on anything less than an Intel 80286-based machine. Some even proclaim Windows a wash on anything less than an 80386.

Well, my Uncle Jim, who runs Windows on an Intel 8088-based Zenith system, disagrees. For him, Windows' performance is perfectly adequate, with the bulky Aldus Pagemaker running just fine.

Submillisecond junkies are probably asking what is wrong with Jim. Absolutely nothing! It is just that this retired Marine colonel, who lives on a beautiful lake in New Hampshire, has an entirely different notion of performance. If you made the move from a Commodore 64 to a low-end Zenith personal computer, you would be pleased with the way Windows works, too.

Every once in a while, this business should just slow down and enjoy looking at a lake while a Windows file opens.

Lotus: "No language lament." An item recently ap-

Continued on page 35

HP creates CD-ROM hookup

Interface allows PCs to glean document information from compact disk

BY SALLY CUSACK
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. announced a software package last week for developing compact disk/read-only memory (CD-ROM) applications on an HP Vectra or an IBM Personal Computer AT.

Called Laserretrieve, the product automatically organizes information into a document-like format to be used with CD-ROM technology, the vendor said.

Positioned for large corporate environments in which users want to create large, read-only documents, the company said the product's easy-to-use interface, combined with CD-ROM storage capabilities, will give it an advantage over other forms of in-house electronic publishing technologies.

CD-ROM storage devices have the ability to hold up to 600M bytes of data, the equivalent of 200,000 pages. Laserretrieve maintains a database-build component for indexing and structuring large amounts of information from various sources into a single database and then makes that information retrievable off CD-ROM through the end-user interface, HP spokesmen said.

The product will initially be distributed through value-added resellers and OEMs and will be combined with CD-ROM publishing or data preparation services to provide a complete CD-ROM application for the customer, the vendor said.

"This software is not really a CD-ROM interface. It is a workstation interface that will work across a number of environments," said Douglas Isles of HP's Application Support Division, which devised the product.

The menu-driven interface can facilitate searches through either browsing or finding keywords and was designed for both full-text and graphics documents. Up to three databases can be searched simultaneously, the vendor claimed.

The user interface requires an HP Vectra or an IBM PC AT with 640K bytes of random-access memory, 5M bytes of hard disk storage and a CD-ROM drive. The database-build software costs $50,000 for a single license, and the user interface software is priced at $500 per PC. Deliveries are slated for November.

Aldus late to graphics battlefield

BY STEPHEN JONES
CW STAFF

REDWOOD CITY, Calif. — Desktop publishing giant Aldus Corp. made a late jump into the desktop presentation market last week, joining five other companies that have already staked a claim in the fledgling business.

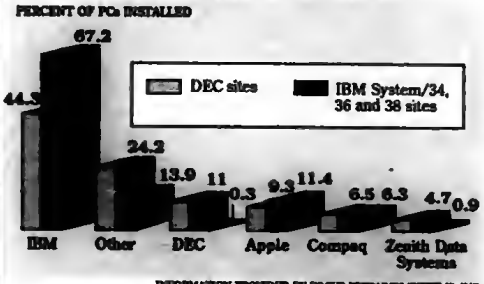
Like other desktop presentation programs, Aldus' Persuasion is aimed at casual business users who want flashy computer-generated slides or overhead transparencies without much trouble. Persuasion, which sells for $495 and will be available in the fourth quarter of this year,

Continued on page 38

Data View

IBM micros reign at mini sites

Other major PC suppliers don't even come close



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CW CHART

Borland ups support

Aims to please customers with new offerings

BY ALAN J. RYAN
CW STAFF

SCOTTS VALLEY, Calif. — Users are demanding increased support from their software vendors. Some will even forsake bargain-priced packages if they do not include the ability to get through to the vendor in minutes when a problem arises.

Aware of these demands, Borland International recently introduced its Borland Enhanced Support and Training (BEST) program, part of which includes dedicated technical support for customers who request it.

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Inside

- Shopec cuts through the hype at Sloan-Kettering. Page 33.
- Grandview brings order to chaotic work places. Page 33.
- Pivar rolls out graphics operating system. Page 40.

How Micro Focus COBOL helped the U.S. auto industry get up to date with Just-in-Time Manufacturing

In 1984, Ted Annis and Gail Jackson founded Supply Tech to develop software that would provide communication of business documents between parts suppliers and the major U.S. automakers.

With the release of its ST1 product, Supply Tech had the cost-effective application that suppliers needed to service the Big 3 automakers' mandate for Electronic Data Interchange (EDI) software to make Just-in-Time manufacturing possible.

Annis and Jackson agreed that COBOL was the right choice as their development language. "When used properly COBOL lends itself to self-documentation which means easier implementation and maintenance."

Jackson, Supply Tech's President and head of product development, was already familiar — and dissatisfied — with another COBOL. But Micro Focus COBOL had the mainframe COBOL commands they needed. "Micro Focus also offers additional capabilities via standard routines so that you can do most things in COBOL that you can usually do only from a lower-level language," Jackson notes. "And no matter how technically sophisticated they are, our mainframe programmers just go crazy over the Micro Focus Editor and ANIMATOR."

Supply Tech's new STX12 product is a generic EDI system that is opening up new markets for the company. Productivity increases from Micro Focus COBOL have made it easy for Supply Tech to expand its product line.

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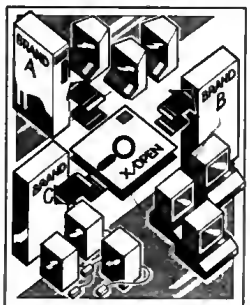
They mean that information systems revert in their correct place to your corporate scheme: freeing your managers to concentrate on business decisions, rather than computing decisions.

And above all, they mean an exponentially increased return on your computing investment. (Research shows that the cost of training staff to use new hardware runs at 100 times the capital cost. And the cost of integrating non-compatible systems runs at around 1,000 times!)



X/OPEN software compatibility: the key to increased return on computing investment.

X/OPEN: working for you

X/OPEN is an independent international body, responsible for establishing Open Systems standards.

X/OPEN grew out of the shared philosophical and financial commitment of five major systems suppliers: a commitment to bringing genuine multi-vendor computing standards to a perplexed marketplace. In four years of existence, progress has been remarkable.

Ten further multi-national systems suppliers have joined, all producing X/OPEN-conformant product.

Over 100 of the world's most significant software companies are committed to producing X/OPEN-conformant packages, and the list grows daily.

And X/OPEN's Portability Guide – a technical template for Open Systems – is readily available to manufacturers and users alike.

The outcome is computer standards that allow you to face the computing future with confidence.

X/OPEN: bringing user and supplier together

X/OPEN provides an open forum for the world's users. It incorporates consultative bodies for the world's leading software vendors. It brings together fifteen of the world's most significant computer companies.

And it creates an environment in which they all can talk – and listen – to one another.

For computer companies, X/OPEN membership means helping to serve the needs of their customers in a fully informed way.

For software vendors, X/OPEN's Software Partners Program solicits vendors' views, and provides them with new market opportunities.

For users, X/OPEN's User Advisory Council means that Open System standards are being shaped to suit the needs of users, everywhere.

So if you're a user, the way ahead is clear ... *Specify X/OPEN systems today, as a secure investment for tomorrow.*

Catch up on achievements to date; keep in touch with achievements to come. Contact us for a complete overview on X/OPEN's objectives, and its continuing achievements.

We'll send you full information on X/OPEN, and add your name to the mailing list for *Open Comments*, a regular journal that keeps you to touch with the latest Open Systems developments.

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Please send me more information immediately.

☐ As potential Open Systems users, we want to be free to choose the most appropriate systems, independent of source.

☐ As software vendors, we want to know how X/OPEN can help us reduce interface problems, and concentrate on increased product capability.

☐ As systems suppliers, we want to find out how X/OPEN standards can help us to meet the precise needs of our customers - both existing and potential.

☐ We don't fit into any of these categories. We simply want to find out more! We are _____

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SQL: Interfaces, Language, Engines & Tools

A 3-DAY CONFERENCE IN LOS ANGELES
SEPTEMBER 28-30, 1988

Featured Presenters:

- **SHAKU ATRE,** President, Atre/Computer Assistance
- **DAVID GILMOUR,** General Manager of Advanced Products, Lotus Development Corporation
- **PHILIPPE KAHN,** President and CEO, Borland International, Inc.
- **LEONARD KLEINROCK,** Founder and Chairman of Technology Transfer Institute
- **LINWOOD PEARCE,** Chief Operating Officer, Software AG
- **LELAND REISWIG, JR.,** IBM Laboratory Director, IBM Corporation
- **ROGER J. SIPPL,** Chairman/CEO, Informix Software, Inc.

Featured Vendors:

- Amherst Information Systems, Inc.
- Applied Data Research, Inc.
- Atre/Computer Assistance
- Borland International, Inc.
- BrownStone Solutions, Inc.
- Candle Corporation
- Cincom Systems, Inc.
- Computer Corporation of America, Inc.
- Data Base Utility Group, Inc.
- Informix Software, Inc.
- IBM Corporation
- Lotus Development Corporation
- MUST Software International
- Oracle Systems, Inc.
- Platinum Technology, Inc.
- Relational Technology, Inc.
- Tandem Computers
- Teradata Corporation
- VM Software, Inc. (Applied Relational Technology)

CONFERENCE AGENDA

WEDNESDAY, SEPTEMBER 28, 1988

7:30 am - 9:00 am Registration and Continental Breakfast

9:00 am - 10:15 am **Shaku Atre, Atre/Computer Assistance, "SQL in Various Flavors: Interfaces, Language, Engines & Tools"**

Shaku Atre is an internationally renowned expert and lecturer on data base and end-user computing. She is president of Atre/Computer Assistance in Rye, New York - a firm assisting clients in the selection, design and implementation of data base/data communications systems. During 14 years at IBM, she held a wide variety of management and staff positions, including faculty member of the prestigious Systems Research Institute. Ms. Atre has authored three popular books, *Data Base: Structured Techniques for Design, Performance and Management*, *Data Base Management Systems for the Eighties* and *Information Center: Strategies and Case Studies*. She holds a master's degree in statistics and has done research at the University of Heidelberg, W. Germany, in applied mathematics.

About this session: IBM's Systems Application Architecture (SAA) uses SQL as a common thread for communicating with data base management systems (DBMS). Many *tools* developed and marketed by independent software vendors to support the DB2 and SQL/DS arena have been announced and implemented. Numerous hardware and software vendors are supporting SQL as an *interface* to communicate with a variety of DBMSs. Several microcomputer software vendors are forming alliances to provide SQL-based *engines* for OnLine-Transaction-Processing (OLTP). UNIX promises to be more dominant in the 90's and the new Open Software Foundation (OSF) will be making waves in the marketplace. How should a consumer try to evaluate, select and then use these products to achieve the best benefits for today's and tomorrow's data base environment?

10:30 am - 11:30 am **Leland Reiswig, Jr., IBM Corp. "OS/2 Extended Edition Overview"**

Leland R. Reiswig, Jr. is Entry Systems Division (ESD) Austin Lab Director. He joined IBM in 1966 and held various management positions including Systems Manager, ESD Communications and Data Management Systems Software, Product Manager of Business and Personal Information Products, Systems Manager of PC Communications Products, IBM Office Systems Strategy Manager and Planning Manager for IBM Host Office Systems. Mr. Reiswig holds a BS in Business and Industrial Management.

About this session: Mr. Reiswig will discuss the PS/2 and OS/2 Extended Edition as an application platform for distributed applications and data. The OS/2 Extended Edition provides systems services, data management, communication management, system and network management as the application platform for modern systems.

11:30 am - 1:00 pm **LUNCHEON**

1:00 pm - 1:45 pm **Concurrent Sessions by Vendors**

2:00 pm - 2:45 pm **Concurrent Sessions by Vendors**

3:00 pm - 3:45 pm **Concurrent Sessions by Vendors**

4:00 pm - 5:00 pm **Panel led by Shaku Atre with Vendor Representatives**

HOSPITALITY SUITES HOSTED BY VENDORS
5:00 pm – 8:00 pm

THURSDAY, SEPTEMBER 29, 1988

8:30 am - 9:30 **Roger J. Sippl, Informix Software, Inc. "SQL & UNIX"**

Roger J. Sippl, Chairman and CEO, founded Informix Software, Inc. in 1980 serving as president and chairman of the board until the company's merger with Innovative Software in February, 1988. Mr. Sippl has written numerous articles focusing on UNIX and relational data base management issues, which have been published in leading computer trade publications. He is also co-author of a computer dictionary. He holds a bachelor's degree in computer science from the University of California at Berkeley.

About this session: Mr. Sippl will trace the birth of the relational data base model from its early success on mid-range computers, highlighted by the UNIX operating system, to its current use in high throughput transaction processing on super-minicomputers and multi CPU minicomputers. He will take a look at the evolution of SQL from a data base server to an information server.

9:45 am - 10:45 am **David Gilmour, Lotus Development Corporation, "Advances in Data Base Technology Under OS/2 and Presentation Manager"**

David L. Gilmour is General Manager of Lotus Development Corporation's Advanced Products Division. He is responsible for managing the development of a family of software products targeted at advanced personal computers and workstations. Mr. Gilmour also has marketing responsibility for Lotus/DBMS, the company's planned entry into the data base management software market.

About this session: Recent advances in technology and emerging information needs are changing the face of the data base market. PC users want to capitalize on the new hardware, LANs and system software to be able to more easily use and share data. With OS/2 and the Presentation Manager, software developers are now set to deliver data base tools that relieve the MIS burden of providing access to multiple data sources while also ensuring integrity. Bridging the requirements of end-users and MIS, these tools will also serve as a platform for applications development.

11:00 am - 11:45 am **Concurrent Sessions by Vendors**

11:45 am - 1:00 pm **LUNCHEON**

1:00 pm - 1:45 pm **Concurrent Sessions by Vendors**

2:00 pm - 2:45 pm **Concurrent Sessions by Vendors**

3:00 pm - 5:00 pm **Panel led by Shaku Atre with Vendor Representatives**

HOSPITALITY SUITES HOSTED BY VENDORS
5:00 pm – 8:00 pm

FRIDAY, SEPTEMBER 30, 1988

8:30 am - 9:30 am **Linwood Pearce, Software AG, "SQL and 4GL's: Working Together to Solve Business Problems"**

Mr E L Pearce joined Software AG in December 1985 As Executive Vice President, Sales and Marketing, he was responsible for USA sales and worldwide marketing along with business development which includes OEM's, co-marketing, application vendor interfaces and consulting agreements Following the recent merger with Software AG, Germany, Mr. Pearce was named Chief Operating Officer of Software AG North America Formerly, he was with ADR for 18 years in a variety of technical, sales and marketing positions

About this session: Mr. Pearce will review the business challenges of the 90's and how 4GL's and SQL work together to solve these issues Business challenges include transition from old data architectures into portable environments, impact on the still-growing application backlog, and 5th generation application development methodologies.

9:45 am - 11:00 am **Leonard Kleinrock, Technology Transfer Institute, "Network Technology: Where Are We Going?"**

Leonard Kleinrock is Professor of Computer Science at the University of California at Los Angeles He received his Ph D from MIT, is the author of five major books, and has published over 160 papers on networking technology Dr Kleinrock is a member of the National Academy of Engineering, a Guggenheim Fellow, an IEEE Fellow, an IEEE Distinguished Lecturer, a member of IBM's Science Advisory Committee, co-winner of the 1982 Ericsson Prize and recipient of the 1986 Marconi Fellowship Award He founded Technology Transfer Institute in 1976

About this session: A bewildering array of networking technologies and products has appeared in today's marketplace Dr Kleinrock will describe how they work, how they fit together where they came from, and where they are likely to take us

11:15 am - 12:00 pm **Concurrent Sessions by Vendors**

12:00 pm - 1:30 pm **LUNCHEON featuring Philippe Kahn, President and CEO of Borland International, Inc., "SQL and Its Impact on Microcomputer Industry."**

About this session: The transition to more powerful PCs and workstations brings a migration toward more advanced operating systems. Those who make decisions in technology directions must weigh many factors, including accessibility, availability of applications software, and connectivity Philippe Kahn will explore the role of and need for a balanced and integrated design approach to SQL interfaces, language, tools and engines A growing trend shows that SQL will be the language that ties together diverse systems in varying operating environments. Discussion will cover the fundamental choices corporations must make in the coming years

1:30 pm - 2:15 pm **Panel led by Shaku Atre with Vendor Representatives**

2:30 pm - 3:30 pm **Wrap Up Session with Shaku Atre & Leonard Kleinrock**

VENDOR PRESENTATIONS

A very important feature of this conference are the frequent concurrent vendor sessions which provide clear and specific information about various products for the SQL environment. Some of the vendors represented at the conference are:

■ Applied Data Research, Inc.

Applied Data Research, headquartered in Princeton, New Jersey, is one of the world's leading independent suppliers of SQL-based, relational technology. ADR's full function, distributed relational data base, DATACOM/DB, can be combined with a full complement of needs-oriented relational tools to provide a comprehensive SQL-based system that will deliver a very low cost per transaction. ADR will focus its presentation upon DATACOM/DB Version 8 and DATADICTIONARY 3.0, its latest releases. The discussion includes a complete explanation of ADR's SQL implementation in its data base and language products.

■ Atre/Computer Assistance

Atre/Computer Assistance is a nationwide leader in providing consulting, education and software products for the data base environment. With emphasis on Relational DBMS, DB2 and SQL/DS, their results-oriented training courses and seminars cover over 50 topics pertinent to the data base development life cycle; strategic planning, data base analysis and design, application programming, data administration and control. Underlying their courses is the proven and popular Atre Methodology®. It uses a highly structured technique to produce conceptual, logical and physical data base models for DB2, SQL/DS and other relational data bases.

■ BrownStone Solutions, Inc.

BrownStone Solutions offers the DataDictionary/Solution, an open architecture, extensible, ER-based data dictionary featuring a DB2 repository and relational power within an interactive dialog. Their workbench approach provides a platform for integrating repository information and tools, leveraging systems developers and facilitating central control to the desired extent. Their software provides a common thread among the various tools and methodologies that may exist within an organization, without imposing any methodology of its own. The DB2 Admin/Solution, utilizing the workbench platform, manages definition and control of DB2 objects and security authorizations, enforces naming standards, and leverages DB2 administrative functions.

■ Candle Corporation

Candle Corporation is the world's leading independent developer and marketer of performance management software for IBM mainframe computers. Candle products support the MVS, IMS, CICS, VM and DB2 environments. OMEGAMON for DB2 is an online, real-time performance monitor providing internal information about the DB2 system as it runs. This provides early warnings of problems and diagnostic information enabling users to take immediate action and achieve maximum throughput while maintaining service levels.

■ Cincom Systems, Inc.

Cincom Systems' new MANTIS SQL Support for DB2 offers IBM mainframe computer users an application development system that simplifies the development of new user applications in a DB2 environment. Part of Cincom's recently announced end-to-end application development product, THE CASE ENVIRONMENT (Cincom Advanced Software Engineering Environment), MANTIS SQL Support gives professional programmers the application development system they need to take full advantage of DB2 and SQL facilities.

SUPRA from Cincom is an all-new advanced relational data base management system for IBM and VAX environments. SUPRA combines the ease of use and flexibility of relational technology with the high performance needed in production environments.

■ Computer Corporation of America, Inc.

Computer Corporation of Americas premier product is its MODEL 204 DBMS. Like the complete CCA product line, MODEL 204 runs on all IBM mainframe operating systems, and across all System 370 and PCM processors, including the new 9370. Earlier this year, CCA announced that Version 2 of MODEL 204 will be commercially available in the fourth quarter of 1988. The new version features significant enhancements for higher performance, including increased transaction rates, support for larger numbers of concurrent users and improved sequential processing.

■ Data Base Utility Group, Inc.

Data Base Utility Group specializes in performance and application monitoring software for data base management systems. Insight/DB2 is the first real-time performance monitor for DB2. It provides complete facilities for system-level exception monitoring and tuning. In addition, it allows detailed tracing of applications and identification of sources of poor performance. Users may define their own displays and output may be sent to disk files for later processing.

■ Informix Software, Inc.

Informix Software, Inc. is a leading supplier of relational data base management and application development software for the UNIX operating system. Informix offers its complementary and compatible SQL-based RDBMS software and fourth-generation application development tools for the UNIX, VMS®, MS-DOS®, OS/2®, MVS® and Macintosh A/UX® operating environments and a variety of networked computer systems. Informix also offers a line of advanced office productivity software including the SmartWare® line and the soon-to-be released Wingz® graphic worksheet.

■ IBM Corporation

IBM is changing dramatically. Today's IBM also means consumer products, raw methods of distribution, business units with a great deal of autonomy, a spirit of entrepreneurship. IBM is an organization more vigorous and flexible than ever.

In April, 1987, IBM announced IBM Operating System/2 Extended Edition. This is a new generation of operating system providing comprehensive function for both the end-user and the application developer. It provides the capabilities of the IBM Operating System/2 Standard Edition, plus relational data base and communications managers and a Local Area network requester, in a single product.

■ Lotus Development Corporation, Inc.

Lotus is entering the data base market with a high-performance SQL data base management system code-named Lotus/DBMS. It is a family of products, consisting of Lotus/DBMS Tools, a set of front-end, graphical tools under OS/2 and Presentation Manager and Lotus/DBMS Server, a multi-user PC-LAN data base server which uses the industry-standard SQL query language. Lotus/DBMS will use Lotus' new data access architecture, Blueprint, to permit the Lotus/DBMS Tools to transparently access data in a variety of data base servers, residing on various platforms.

■ MUST Software International

MUST Software develops, markets and supports NOMAD, the fastest-growing, fourth generation system in its class. Relational from its inception (1975), NOMAD's advanced technology provides rich functionality and improved productivity for developing applications that leverage your investment in SQL-based data base engines. Additionally, NOMAD provides easy access to multiple data sources. NOMAD was the first to provide seamless integration of 4GL capabilities with SQL/DS and DB2, adding relational features not found in these RDBMSs, including referential integrity and complete outer join support.

■ Oracle Systems, Inc.

The ORACLE RDBMS provides a high-performance relational system across a wide range of computer and operating systems from mainframes to micros. Oracle provides a full range of 4th generation languages and decision support software for end-user computing and application development. Oracle's SQL*Star enables the user to interconnect both ORACLE and nonORACLE DBMSs. In April 1987, Oracle announced the only stand-alone RDBMS product, Professional ORACLE, to take advantage of the protected mode features of the IBM PC/AT, Compaq 386 and IBM PS/2, without waiting for OS/2.

■ Platinum Technology, Inc.

PLATINUM is dedicated to providing the highest quality software, education and professional services solutions to the relational technology marketplace. The company currently offers several product portfolios for the DB2 data base environment, including the PLATINUM CATALOG FACILITY (RC/QUERY, RC/UPDATE, RC/MIGRATOR, RC/SECURE), PLATINUM DATABASE ANALYZER, PLATINUM REPORT FACILITY, PLATINUM DB2 GUIDE, PLATINUM EDUCATION SERIES and the PLATINUM REFERENCE for DB2. The PLATINUM DATABASE ANALYZER is your DB2 data base and DASD management solution.

■ Relational Technology, Inc.

Relational Technology, Inc. is a leading supplier of data base software for networked, corporate information management systems. The company's primary product, INGRES, allows users to access and integrate data across a wide variety of computers and operating systems.

The INGRES family of products is the most advanced distributed data management and application development system portable to all major computers. The products combine:

TOOLS — integrated 4GL application language and SQL

POWER — utilization of advanced multiprocessor hardware technology for dramatic performance increases

ACCESS — an open-architecture, distributed data base accessible across heterogeneous environments

■ Tandem Computers

Tandem's expertise in high performance distributed data base management helps you establish and maintain better relationships with your customers. Traditionally, a corporation has an unpleasant dilemma: choose a data base management system that performs well and provides data integrity, or choose a system that allows data to be accessed easily by non-technical users. Tandem's DBMS, NonStop SQL, has bridged this gap, offering ease of use with high performance and unfailing data integrity. At Tandem, high performance means being able to support over 200 transactions per second against a shared data base, with full transaction protection. It means being able to achieve this performance using standard hardware and software products.

■ Teradata Corporation

Teradata Corporation designs, manufactures and markets the DBC/1012 Data Base Computer, a modular supercomputer optimized for SQL relational data base processing. The DBC/1012 employs a proprietary parallel processing architecture that leverages industry standard components. Through the DBC/1012's Shared Information Architecture, the system creates a shared data base resource, thus enabling users to access and analyze data from a number of host computing environments. Connectivity to the DBC/1012 include IBM, Unisys and Honeywell Bull mainframes, DEC VAX and AT&T departmental systems, and IBM PCs, Metaphor and SUN workstations.

■ VM Software, Inc. (Applied Relational Technology)

Applied Relational Technology, a division of VMSI, was formed in 1986 to produce products for VM SQL/DS. Three products are currently available. VMSQL/EDIT can be used to edit multiple rows from multiple SQL/DS tables as well as for building screen-based data entry applications. With VMSQL/REPORT, a sophisticated report writer for SQL/DS, programmers and consultants can use procedural and nonprocedural instructions to build reports quickly and easily. VMSQL/REORG automates reorganization and maintenance of DBSPACEs, tables, indexes and authorizations to improve systems performance.

SQL: Interfaces, Language, Engines & Tools

The Definitive Conference to Enhance Your Understanding of SQL

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LOS ANGELES
SEPTEMBER 28-30, 1988

Audience

This conference will be valuable to those who are using or who are considering using SQL with any relational product in their environment

It is appropriate for:

- Data Base Administrators
- Data Base Designers
- Systems Analysts
- Application Programmers
- Application Development Managers
- End-users and End-user Managers
- Information Center Staff & Managers
- Communications Managers
- Marketing Managers
- Financial Managers

You Should Attend If . . .

- You are considering developing portable applications software on IBM, DEC or other computer hardware, whether in a mainframe, midrange or microcomputer environment.
- You want to know how PS/2 systems will be doing with OS/2 Extended Edition with SQL as a common thread
- You are responsible for the management of users in communications, marketing or financial areas.
- You are an end-user who wants to access data stored on the mainframe by using the microcomputers via SQL.

AN INDUSTRY FIRST

Technology Transfer Institute and Atre/Computer Assistance have joined forces to create this unusual opportunity for data base professionals and management to come together for an outstanding SQL conference.

A departure from TTI's usual curriculum, this SQL conference will provide a variety of resources for attendees. Throughout the three days, participants will acquire information in a fast-paced environment that includes:

- Presentations by seven major industry figures
- A strategic assessment of SQL: present & future developments; portability formula
- Over 25 hours of Vendor Presentations
- Daily Panel Discussions led by Shaku Atre quizzing vendors to provide the consumer with the most pertinent information for product evaluation, selection, implementation and management
- Information to make your DB2, SQL/DS, ORACLE, INGRES, SUPRA, SYBASE, TANDEM, TERADATA, 1-2-3, UNIFY, INFORMIX, PARADOX environments successful
- Hospitality Suites for further investigation of products
- Lunchtime roundtable discussions with featured presenters
- In-depth question and discussion periods

The Potential of SQL Technology

SQL has been adopted as an official standard by the American National Standards Institute (ANSI) and also by the International Standards Organization (ISO). In addition, numerous SQL-based products are already available in the marketplace, close to 150 of them by the latest count.

What is it about SQL that everyone in data processing should be familiar with or maybe even develop expertise in? SQL is the one uniform language used to describe the data (DDL) to the Data Base Management System, it is the one uniform language used to manipulate the data (DML) from the data base(s) and SQL is the one uniform language used to control the data (DCL) from unauthorized use. Does it mean then that SQL is a complete language without any need for expansion? By all means — it is not a complete language. It still needs to grow. But, we see glimpses of SQL in a number of environments. SQL is the interface used with DB2, SQL/DS and many other Relational DBMSs. SQL is the language used by DB2, SQL/DS, ORACLE and by a number of other products. SQL is used as an engine by Microsoft, Ashton Tate and Sybase; by Lotus 1-2-3 and Gupta Technologies; AT&T, Sun Microsystems and INGRES; Informix and Innovative Software.

Purpose

This three-day conference will provide a broad range of clear information designed to assist attendees in their own decision-making processes.

Expect to gain insight into the issues raised by these pertinent questions:

- How do I position SQL for software portability?
- Is SQL the glue to hold SAA-based hardware, systems software and applications software?
- Will SQL be a language for everyone to write programs or should it be reserved for conventional application programmers?
- In what ways will SQL assist in an IBM, DEC, AT&T, TANDEM or TERADATA environment?
- What types of training will be necessary for SQL to be used effectively with DB2 and SQL/DS?
- What management issues come into consideration when seeking to use SQL and SQL interfaces to create a successful mainframe micro connection?
- How is SQL used as an engine in On-Line-Transaction-Processing (OLTP) environment?
- How to evaluate and select SQL-based tools: What is available, and which ones will provide the best return on investment?
- Have you achieved all the benefits promised by the Relational Data Base Technology (if you have already acquired one)?
- How can SQL assist in achieving productivity gains in an environment with a conventional non-relational DBMS? What should you do about the existing applications software?
- Discovering SQL: What are the useful features, the troublesome features, and the additional facilities required?

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- Luncheon presentation by Philippe Kahn
- Luncheons and Refreshment Breaks

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Conference Fees

Conference Fee: $995.00 (U.S dollars)

Discounted Fee: For each five paid attendees your organization sends to this Conference, a sixth may attend tuition-free To qualify for the tuition-free attendee, your organization must register all attendees through one person at the same time All attendees must be from the same organizational site and have one billing address

Hotel Information

Participants must reserve their own hotel accommodations A block of rooms has been reserved at the Los Angeles Airport Marriott until September 10, 1988 You should call the hotel directly at (213) 641-5700 and identify yourself as an SQL Conference attendee TTI accepts no responsibility for hotel costs, reservations or availability **MAKE YOUR RESERVATIONS EARLY** A complimentary shuttle service to and from Los Angeles International Airport is provided by the Marriott

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SMALL TALK

Rich Finkelstein

OS/2 fuels hypermedia

It is doubtful that many moviegoers would have gone to see *Star Wars* if it had not had the phenomenal array of images, special effects and sound. Images and sound combined with words are critically important to conveying information quickly, accurately and in a pleasing manner.

Despite this, there are still many who ridicule Microsoft's graphical OS/2 Presentation Manager as being unimportant and a plot to sell more hardware and software.

Nonetheless, graphics and a new class of software called hypermedia has been catching on. As the name implies, hypermedia combines various types of information media — audio, visual, graphical and communications — into one seamless applications environment.

Apple's Hypercard introduced hypermedia to the general public. If Apple wanted a piece of software to show off the Macintosh's wide range of capabilities, Hypercard was definitely it.

And applications are already pouring in. For instance, Activision's Focal Point combines graphics, images and communications facilities to form an easy-to-use customer and proj-

Continued on page 39

Skopec warns users of PC hype, fads

IN PERSON

When a friend took Art Skopec to his first Long Island PC User Group meeting, he didn't even own a personal computer. But that didn't stop the friend from nominating Skopec for president.

Four years later, Skopec is still president of that group, in addition to being the senior PC analyst at The Memorial Sloan-Kettering Cancer Center in New York. The positions allow him to educate — he teaches courses to other users group members and deals with users at work — and pursue his interest in writing (he writes newsletters for both) and his fascination with PCs.

Currently, Skopec is working on one of his long-term projects; he is writing a book on the selection of PC equipment based on practical product-specific solutions. He recently spoke with *Computerworld* senior writer Alan J. Ryan about the users group, the future of OS/2 and IBM's Personal System/2 and the role of microcomputers at Sloan-Kettering.

What are some of the major concerns of your users group community?

The biggest problem, and this is throughout the PC world, is, "What is the best tool to attack the task I have at hand?" The problem is that many people go backward. They are so preoccupied with getting the latest and greatest hardware and software that they lose sight of that task they are trying to perform. What we try to do is expose them to what's out there, to what people are doing in business, and to be less conscious of the hype in the marketplace.

Sloan-Kettering's Skopec

Another thing that concerns people is the latest software. The thing we've tried to instill in people is that a first release of a product is not necessarily one you should buy into. You're a lot better off going with a standard item than something that is unknown or too new to be proven.

How long will it take for IBM's OS/2 to really take hold?

We have to get full Version 2 out with all the communications services, then have it in the marketplace and shake it down for at least six months. We're looking at 1½ or two

Continued on page 34

Tool keeps data tidy

BY JAMES A. MARTIN
CW STAFF

The more powerful our personal computers become, the more we want to do on them. And the more we want to do, the more organized we need to be.

With that premise in mind, Symantec Corp. in Mountain View, Calif., introduced last winter a personal information management tool called Grandview. The program is a follow-on product to Symantec's Think Tank organizer but not a replacement, company officials said.

Grandview was designed to complement spreadsheets and databases on the IBM Personal Computer and compatibles by organizing and relating data in those programs. The program offers a viewing facility to allow users to look at data in whatever way they prefer. Best of all, Grandview can manage a variety of workaday tasks — compiling lists and phone files, writing memos, outlining reports — and, in general, keeping track of many loose ends. It even does windows.

Symantec's Grandview

- Runs on IBM PCs and compatibles
- Requires 256K bytes RAM, two 5¼-in. floppy disk drives, DOS 2.0 or higher

To hear users tell it, Grandview has brought order to many a chaotic work environment.

"I use it to organize my life," said Stuart Miller, a systems development specialist at Omm Microsystems in San Francisco. "I use Grandview to log phone calls to and from clients, keep a tickler file, track my expenses, main-

Continued on page 39

Galleon loot cataloged with micros

BY ALAN J. RYAN
CW STAFF

SINGAPORE — In 1638, when the crew of a Spanish galleon loaded Asian gold, porcelain, silks and teak from a dock in Manila into the ship's broad hull, being buried at sea with the treasures was likely far from their minds. But it happened.

Some 350 years later, their sea grave has been found — and personal computers are playing a major role in the recovery of the cargo, made many times more valuable by time and inflation.

The site of the ship's demise was discovered by the commercial salvage firm of Pacific Sea Resources of Singapore after it extensively researched 17th century trade routes and pieces of porcelain were discovered on a nearby beach.

Such an expedition can often justify its costs; one off the coast of Malaysia, for example, recently uncovered artifacts worth more than $3 billion. Pacific Sea Resources had been told it could sell its artifacts at Sotheby's London auction house if it was successful, and computers are helping to track that success.

In February 1987, a 30-member expedition was launched to the site off the coast of Saipan, a

Continued on page 38

PCs aid in recovery *of booty from sunken Spanish galleon*

SOFT TIPS

Pesky messages

Personal computers, particularly those of the IBM-compatible ilk, are known for giving users unsightly error messages and less than pretty responses to some user input. But this can be changed.

For example, if you are using IBM PC-DOS 3.0 or higher and are writing batch files that use the COPY command but do not want the message "1 File(s) copied" to appear, try using the DOS redirection operator to direct the file name echoes to the null device. COPY A:*.* B>NUL will copy all files on drive A to drive B without displaying their names on screen.

Information provided by Corporate Software, Inc., a Westwood, Mass.-based software reseller.

Top sellers

Software: July 18-22

1	Lotus' 1-2-3
2	[illegible]
3	Lotus' Symphony
4	[illegible]
5	IBM's PC-DOS 3.3
6	[illegible]
7	Delta Technology's Direct Access
8	[illegible]
9	Fifth Generation Systems' Fastback Plus
10	[illegible]

INFORMATION PROVIDED BY CORPORATE SOFTWARE, INC.
CW CHART

Skopec

CONTINUED FROM PAGE 33

years. It's so distant that I would not consider OS/2 at this point. The potential when we have a full-blown multitasking operating system that can do printing and reporting and communications while receiving transmission in the background — that's wonderful. We don't have that yet. It's the background processing that's going to be a big feature.

I'm a firm believer in the two, if not three or four, operating systems approach. I believe that DOS is going to be there, as evidenced by DOS 4.0. And there will still be multitasking machines that are based on some sort of Unix-based system. Then we have the alternative operating systems running on the 386s. Then, ultimately, there is the place for a full-blown OS/2, or a derivative, primarily for the business environment.

When, if ever, do you think PS/2s with the Micro Channel Architecture will become more popular?

You would first have to have the operating system that could take advantage of the architecture. A number of times, software predates the hardware. Now we're in a case where the hardware is driving the software again, and we have to get up to speed.

How are you using computer technology at the hospital?

One of the more interesting applications is that we have PCs in each operating room. Overnight, we download patient information into the PC so that the operative record is entered directly from the keyboard, as opposed to being written down and then later having to be keyed into the system.

All of the inventory is done via standard bar coding. The inventory is kept up to date at the OR —they just scan it — so it can be managed more efficiently on a day-to-day basis. It has been a boon.

The operating schedule is handled that way, and when a particular doctor goes in for a particular procedure, the procedures have all been standardized in each doctor's preferences. Equipment and surgical tools, medication, etcetera for the manner in which he performs his operation are all in the computer. When he is assigned to the room, there is no question that his operating pack will be there. It is tied into a Unix-based minicomputer.

Have your information center strategies at the hospital paid off?

Yes. When I was hired three-plus years ago, we were getting our equipment from multiple dealers, assembling them from scratch and installing software at the user sites.

We've gone from there to a single reseller on the supply side supplying all of our hardware and software needs. We have them install all software and an institutionalized menu, then install the machine, test it and basically leave the users functioning.

We used to do all of our own training in the information center. In the last year, we brought in an outside vendor to do our training. By doing that, we've freed our people up to address the more specific user needs.

What are some of the challenges you face?

Basically, being able to look into a crystal ball and to try to perceive what the next major technological breakthroughs are going to be, and especially those that are needed where I am. The other challenge is just communications: getting that information and the knowledge that we have to the users so we can take advantage of it.

Borland

CONTINUED FROM PAGE 31

The program also signals a move by Borland into the big leagues, with the company edging ever closer to the top tier of software firms in sales. As a result, the firm has increasingly adopted big company tactics such as volume discounts.

BEST is primarily aimed at Borland's Fortune 100 customers with a large base of Borland's high-end applications, such as the firm's database, word processing and spreadsheet products. BEST is composed of two components, one free and the other, known as Advanced Support, priced at $2,500 per Borland product.

Customers participating in the free portion of BEST receive a subscription to the Borland News Service, copies of Borland materials such as demonstration disks and videotapes, a free copy of the Borland software supported by the BEST program and the option of a special limited liability agreement, the company said. With limited liability, users are assured that they will not be sued for minor cases of software piracy.

Customers who pay Borland for the Advanced Support program receive the same complimentary services and a library copy of each of the Borland products.

But what they really pay $2,500 for is a special hot line for dedicated customer support. With the Advanced Support option, a Borland technical support representative familiar with a customer's application fields the calls. The Advanced Support program also offers the option of using a remote communications link to provide diagnostics. With this system, Borland technicians can view a customer's application on a screen.

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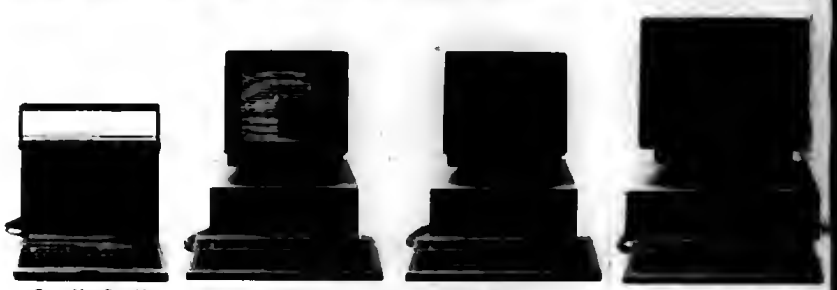

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Software complements of Autodesk, Inc., Microsoft Corp., RealWorld Corp., Software Publishing Corp., Three D Graphics, Inc., Ventura Software, Inc., and Computervision, Inc.

C&C

Barney

CONTINUED FROM PAGE 31

peared in *Computerworld* that questioned whether Lotus could accomplish 1-2-3 Release 3.0 goals if it abandoned the Microsoft C compiler for the hot new compiler from Watcom.

The point, which was made by a Microsoft languages guru, is esoteric but important.

Essentially, the Microsoft guy questioned whether Release 3.0, which will run under both DOS and OS/2, could be multithreaded without Lotus adding vast amounts of extra code. Multithreading is multitasking within itself, so you can chart and recalculate or print at the same time.

You see, Microsoft C has OS/2 multithreading support built in, but it may not create small enough code to satisfy size-conscious Lotus developers. And the C compiler from Watcom creates small code but doesn't have all these advanced multithreading features.

"Not to worry" is the word passed along from Lotus' David Reed, who runs development for 1-2-3 Release 3. According to Reed, multithreading is no problem with Watcom. It is just that Microsoft ain't figured out how Lotus will do it.

Who wrote DOS 4.0? It's fun to be a journalist and see exactly which questions companies are unwilling to answer. Often, even the most innocent question can prompt a frenzy of "No comments," sometimes laced with off-the-record hints.

DOS 4.0 is one example. Many people know that IBM and Microsoft have a joint development agreement that covers DOS and OS/2, but who really knows who wrote the latest DOS 4.0? IBM and Microsoft know, but neither is saying for sure.

Microsoft says the two firms have a joint development agreement but won't reveal terms and conditions. IBM won't really say, either.

But thank goodness for hints. IBM hint No. 1: If you boot PC-DOS 4.0, it has an IBM trademark. IBM hint No. 2: The company had two development managers and a staff of 50, which at one point hit an absolute peak of 150, who worked on 4.0. That seems like enough to upgrade an operating system.

But Microsoft also appears to want credit. These guys point out that the shells for DOS 4.0 and the Presentation Manager, which is based largely on Microsoft's Windows, are pretty similar, and we might draw some conclusions from that.

Despite these teasers, there is still confusion but no official answer.

Still the best? Users, the press, analysts and anyone else with a bone to pick have faulted Lotus for not enhancing 1-2-3.

It seems that everyone is sick of waiting for the next 1-2-3 and is ready to abandon 1-2-3 en masse for newer products.

EVERY once in a while, this business should just slow down and enjoy looking at a lake while a Windows file opens.

Then along comes *Software Digest*, claiming that older is better. According to this venerable software testing house, today's 1-2-3 Release 2.01 has outrun all other spreadsheet contenders for the fifth straight year. 1-2-3 still shines in the areas of fast macro processing, overall performance, minimal recalculation, error handling and overall ease of operation.

And, to top it all off, there are a zillion various little add-on products that somehow make 1-2-3 a better product. Come to think of it, a '57 Chevy sure beats a new Yugo.

Pure speculation. Since Lotus has a new no-comment policy regarding unshipped products, it seems all a good reporter can do is speculate.

But first, a couple of facts. A key member of IBM's OS/2 Extended Edition team recently met with David Gilmour, who heads up Lotus' advanced product development effort, including Lotus/DBMS, which hasn't yet shipped but is expected to eventually compete with OS/2 Extended. OS/2 Extended simply adds communications and database management system features to the operating system.

In addition, IBM has made it clear that it is seeking third parties that can replace certain components of OS/2 Extended with their own software.

Now, let's speculate. The two companies may have been discussing a Blueprint (a new Lotus communications protocol) driver so Lotus applications can talk to OS/2 Extended Edition and vice versa. These applications might include Release 3.0 or Lotus/DBMS tools.

The two companies may have discussed Lotus offering some of its stuff as replacements for certain components of Extended Edition, including perhaps the Lotus database server licensed from Gupta Technologies.

Or maybe they were just gossiping about their bosses.

Barney is *Computerworld*'s senior editor, microcomputing.

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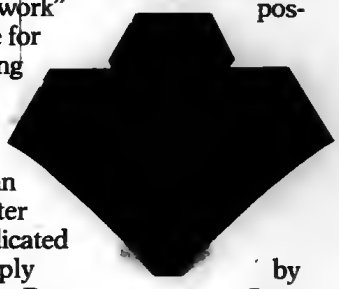

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Galleon loot

CONTINUED FROM PAGE 33

South Pacific island in the Commonwealth of Northern Marianas, near Guam. The team found gold objects and some broken porcelain; the teak, the silks and the wooden ship itself had rotted long ago in the warm waters.

The salvage operation ran from February through the end of May, breaking off before the area's typhoon season. Exploration resumed in January 1988 and was concluded last month.

The treasure retrieval process is where the computer technology comes into play. Pacific Sea Resources hired Kentfield, Calif.-based computer consultant William Claxton to come up with a system that would allow the workers to catalog all of the objects taken from the ocean floor. The items were to be studied by the University of London's Institute of Archaeologists, since authenticating the artifacts would increase their value commercially as well as academically.

"The gold items are probably five times more valuable than just their gold alone because of the archaeological value," Claxton said.

High-tech sloop

For the mission, a boatload of high-technology gear was assembled to gather, document and file photographs of the more than 2,500 artifacts retrieved before removing them from the site. Claxton contracted with programmers in Boston and India to write special programs, and he also wrote some software at the site, he said.

Divers photographed the site with underwater video cameras linked on-line to PCs on the deck of the expedition ship. The items were then photographed again at various stages of their restoration. All of the photos were compiled with text commentary in a computerized database.

Assembly of the database began while the divers were still underwater. Crew members monitored the four IBM Personal Computer AT-compatible microcomputers and selected images from the live video transmission, freezing the frames and entering them directly into the database.

The archive itself was assembled using Ashton-Tate Corp.'s Dbase, teamed with Picturepower from Pictureware, Inc. in Bala-Cynwyd, Pa., a software package that retrieves photographic images put in from the video camera and integrates them with text in a relational database.

Divers initially photographed the entire seabed surrounding the discovery site to provide an orientation. Archaeologists could then divine relationships among the artifacts according to their proximity to each other. Each item was then photographed as it was removed carefully from its place on the sea floor, and then again during restoration.

Claxton said that because Picturepower keeps all of its photos and text in a file that grows without limitation, it became cumbersome but was still useful. A disk copy of the database was packed in with the artifacts when they were shipped to the University of London. The archaeologists were able to survey the entire site and every artifact in the correct context. Some of the artifacts were valued at tens of thousands of dollars by Sotheby's, but the revenue from the Saipan expedition cannot yet be estimated.

Aldus

CONTINUED FROM PAGE 31

runs on the Apple Computer, Inc. Macintosh. Persuasion will feature as many as 18 Autotemplates, which automatically format a user's text into slides or overheads.

The program supports full-function outlining, word processing, drawing and layout. Persuasion imports encapsulated Adobe Systems, Inc. Postscript files and data from Microsoft Corp.'s Excel and Lotus Development Corp.'s 1-2-3.

Although software developers such as Microsoft are already selling similar packages, Aldus President Paul Brainerd said he believes there is still time to crack the emerging market. Brainerd, however, conceded that being a latecomer to the market will not be easy.

Faces the music

"Anybody that enters the market at this point is going to face a lot of competition," he said.

While the quest for market share promises to be tough, some question the size of the potential market and say that comparisons to the rise of desktop publishing are misleading. Cupertino, Calif.-based market research firm Infocorp has said desktop presentation sales are not living up to early industry predictions.

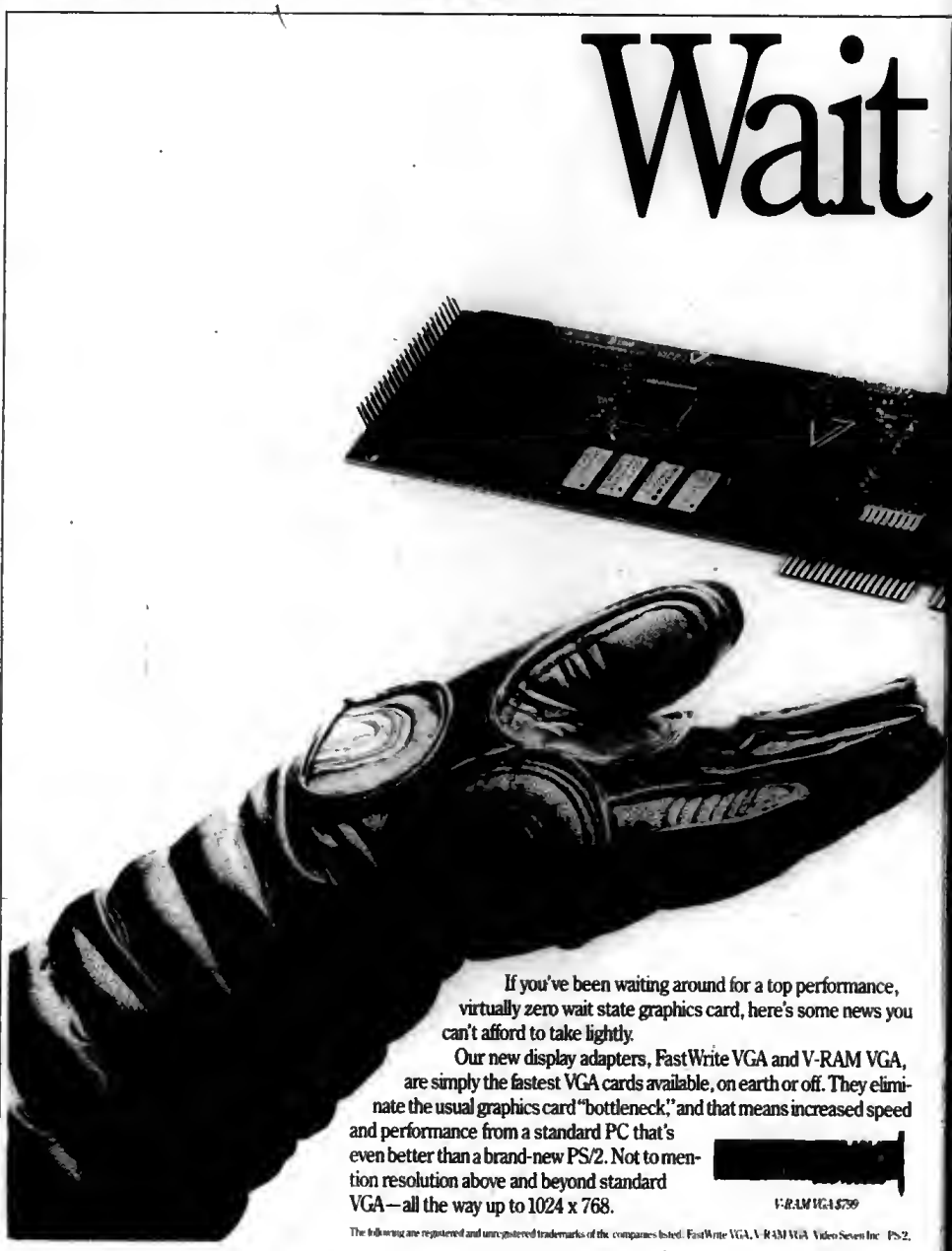
"The number of installed copies does not justify the designation that this is a boom area," said Bill Higgs, Infocorp's director of software research, at a recent Infocorp conference.

Aldus plans to support two slide service firms that will develop users' computer-generated graphics. Companies such as Microsoft and Ashton-Tate Corp. offer similar services, linking users to slide developers through on-line connections.

Aldus acquired the technology for Persuasion from a private developer last February for $500,000. Brainerd said Aldus plans to offer DOS and OS/2 versions of Persuasion, but he would not give specific release dates.

Persuasion runs on the Macintosh Plus, Mac SE and Mac II and requires a hard disk and an 800K-byte external drive.

Wait



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Finkelstein

CONTINUED FROM PAGE 33

ect management application. And City to City, also from Activision, is a travel information system with a map user interface that stores travel itineraries and assists in planning.

But despite its grace, there are limitations to Hypercard. Apple forgot that displaying and manipulating data is only half the job. Any data management system must be based on sound data management principles to ensure flexibility and the ability to be maintained and to guarantee data integrity. Information must also be put into some structure so it can be found and retrieved.

One of Hypercard's shortcomings is negligible reporting capabilities. All that we have learned during the past 15 years about information management and reporting is lost in Hypercard. Although the product's unique programming capabilities help ease these problems, nothing can compensate for Hypercard's chaotic structure.

Fertile ground

We also have the beginnings of hypermedia on IBM and compatible personal computers. One of the most respected hypertext products is Guide from Owl International, which also has a Macintosh counterpart. Guide addresses the problem of handling large free-form text. The product also allows users to access text in a nonlinear manner, meaning a user can leap from one document to a related document. Users can also launch other applications from Owl or can access serial devices such as videodisc players.

What it all boils down to is that applications developers are no longer confined to a rigid record structure but are free to link text in a way that allows users to comfortably browse through information in many different forms.

Hypertext can serve many applications and many types of people well, including lawyers, medical systems and encyclopedias. And these applications are easier to build with hypertext than by using traditional data management systems.

But hypertext applications must recognize that information exists in other programs. For instance, IZE from Persoft uses "hot-link" drivers to word processors, spreadsheets, graphics and communications software.

Knowledge Pro from Knowledge Garden takes integration one step further by combining hypertext and expert systems and points to the future in the process. The expert system component helps guide users through an application, and users can also add their own intelligence to guide the expert system.

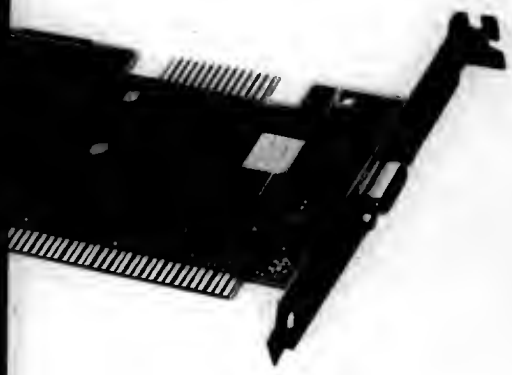
End of the line?

Unfortunately, hypermedia software has gone about as far as it can go with Microsoft MS-DOS- and Intel 80286-based systems. But with the Presentation Manager looming on the horizon, these products will really blossom. There will also be a further blending of relational database, hypermedia and expert system technology, together forming a very powerful environment.

In time, hypermedia will free us from the maddening restrictions of text and move us into a new era of sight and sound.

Finkelstein is president of Performance Computing in Chicago and publisher of *SQL Review*.

less.



You don't have to wait for complete compatibility, either. Not only are both FastWrite VGA and V-RAM VGA 100% register level compatible but they're the only VGA cards that are form-factor compatible. They have the same daughter card connectors as the IBM PS/2 Display Adapter to accommodate hardware add-ons in the future.

FastWrite VGA $599

There's more. Once you buy a Video Seven Display Adapter, we won't leave you hanging. You get free technical support, guaranteed VGA compatibility and a full five year warranty. All for a very down-to-earth price.

So don't wait another nanosecond. Visit your favorite dealer and find out more about FastWrite VGA and V-RAM VGA. Then get a grip. Because once you see what they can do, you're going to be walking on air.

VIDEO SEVEN

Video Seven Inc., 46335 Landing Parkway, Fremont, CA 94538, (415) 656-7800

Display Adapter: International Business Machines Corporation; Variable frequency monitor required for greater than 640 x 350 resolution. Video Seven reserves the right to change specifications without notice

Data tidy

CONTINUED FROM PAGE 33

tain a to-do list. I even keep my grocery list on it."

"It's become like my right hand," said William Almond, president of Memtech Technologies Corp. in Santa Clara, Calif. "Anything I get ready to do, I use Grandview first. Any thought process of mine goes through Grandview first. It's second nature."

"It's gone from being a casual program that I used for specialized projects to being my most predominant program," said Jim Butler, a senior partner with a Los Angeles law firm.

The category sorting and viewing functions are two of Grandview's most popular features, according to users. When outlining a work group project, for example, a user can assign priorities, staff, deadlines and cost estimates to different elements of the project, then easily monitor the progress of those assignments through the sorting and viewing capabilities.

"That way, you can check very quickly to see if those parts of the project you deemed as priorities are nearing completion," Almond said. "It's a way to put a mass of facts together in a structured format."

Grandview users, despite their glowing reports, do have a few items on their wish lists. Butler would like to see an automatic phone-dialing feature in a future version, because he uses Grandview for maintaining an electronic card file.

Because Grandview was designed to organize information, a natural outgrowth of that function would be to assist in developing informational charts and graphics, Miller said. "Mac products from Symantec take an outline and put it into an organizational chart. I wish Grandview could do something like that on the PC."

Most users, however, are satisfied. "I've used a lot of outline programs before, including Symantec's Think Tank. But Grandview is head and shoulders above the rest," Butler said.

NEW PRODUCTS

Systems

A multiuser, multitasking operating system that is reportedly capable of running high-resolution, color bit-mapped graphics has been introduced by **Digital Research, Inc.**

The **Concurrent DOS 386/Multiuser Graphics Edition** allows as many as four DOS applications to be maintained in separate windows and viewed concurrently on the main console, with two applications running on each serial terminal, the vendor said. The product maintains system integrity with DOS 3.3 byte-level and record locking features and can support intertask communication.

A typical hardware configuration includes an Intel Corp. 80386-based machine with a hard disk, an optional memory board and Sunriver Corp.'s Fiber-Optic Host Adapter to allow remote terminal connection.

Concurrent DOS 386/Multiuser Graphics Edition costs $995.

Digital Research, P.O Box DRI, Monterey, Calif. 93942. 408-649-3896.

The French company **Interlogiciel** has designed and developed a high-performance multifunctional operating system that can be used simultaneously by several people working at different stations, the company claimed.

The **Multimos** operating system can reportedly drive up to 255 tasks running on as many as 255 devices. The product includes built-in word processing, spreadsheet and database management programs.

The software is written in the M language, a 56-instruction quasi-assembly language written for a virtual processor with 26 general registers. Files may be up to 4G bytes.

Multimos is priced approximately $800.

French Technology Press Office, Suite 601, 401 N. Michigan Ave., Chicago, Ill. 60611. 312-222-1235.

Software applications packages

A form composition software package has been announced by **Third Wave Publishing Corp.**

Called **Acerform**, the product runs under Microsoft Corp.'s Microsoft Windows environment and includes text editing and image handling capabilities. The user may create forms and presentation materials that incorporate graphics, charts, geometric designs and diagrams. The software is said to offer support for the Hewlett-Packard Co. Laserjet Plus and compatible 300 dot/in. printers.

Acerform costs $299.

Third Wave Publishing, 977 Min Sheng Road, Taipei 10581 Taiwan. R.O.C. 02-763-0052.

Dubl-Click Software, Inc., a publisher of software packages for Apple Computer, Inc.'s Macintosh environment, has released seven volumes of its Wetpaint clip-art collection. Included in the release are four volumes from Dubl-Click's recent acquisition of the Macmemories line from Imageworld, Inc.

The releases are titled **Wetpaint: for Publishing, Animal Kingdom, Industrial Revolution, Island Life, Old Earth Almanac, Printer's Helper** and **Special Occasions**. Each volume consists of three 800K-byte disks containing approximately 1,500 images in Fullpaint file format.

The volumes will cost $79.95 each.

Dubl-Click Software, 18201 Gresham St., Northridge, Calif. 91325. 818-349-2758.

Software utilities

A personal computer utility that gives users the ability to use file names of up to 60 characters has been introduced by **World Software Corp.**

Called **Extend-A-Name**, the product will pop up automatically within an application and will permit up to 60 characters, including spaces and punctuation, for a file name or a description. Other features include point-and-shoot file loading and index printing of all files. According to the vendor, the software normally occupies from 39K to 65K bytes of lower memory and operates in a DOS environment.

Extend-A-Name costs $79.95.

World Software, 124 Prospect St., Ridgewood, N.J. 07450. 800-962-6360.

Spectrum Software, the developer and marketer of the Accounting Tools line of software, has released **Post 'n Profit**, a financial utility for IBM Personal Computers, PC XTs and ATs, Personal System/2s and compatible personal computers.

The utility automatically produces standard financial reports without any setup or learning curve, the vendor said. It is applicable to a variety of business uses, including tasks such as providing quick financial snapshots or getting interim reports on a company's true financial position without having to post prematurely.

The software comes on either 5¼- or 3½-in. diskettes and requires a minimum of 256K bytes of random-access memory, the vendor said.

Post 'n Profit costs $149.

Spectrum Software, P.O. Box 6203, Olympia, Wash. 98502. 800-346-0068.

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DATA STREAM

Thomas L. Nolle

VSATs' future still in orbit

History just seems to keep repeating itself — with satellite communications, anyway.

Back in the early 1980s, satellite services were expected to take off as an inexpensive, distance-independent alternative to costly terrestrial T1 links. Each year, research firms projected astronomical growth rates for the satellite industry, and each year market figures were disappointing. Firms that had earth stations in their parking lots quietly made way for employee parking instead.

Today, terrestrial digital services are cheaper, but many satellite services companies are trying to sell VSATs as the new wave of communications, suitable for many, if not most, data and video applications. But VSATs are no more a communications panacea than traditional satellite services — their advent has not changed the old rules, only refined them.

The main benefit of any satellite offering is the ability to provide wide-band telecommunications links to areas that are outside the normal range of carrier services. Thus, 56K bit/

Continued on page 42

AT&T widens network support

Micom-Interlan agrees to supply TCP/IP net products for 3B series

BY JAMES DALY
CW STAFF

MORRISTOWN, N.J. — AT&T continued to buttress its support of dominant communications protocols for its 3B processor series through a recent alliance with Micom-Interlan, Inc. that extends Transmission Control Protocol/Internet Protocol, or TCP/IP, functionality to the entire line.

Under the one-year, $3.9 million pact, the local-area network designer will supply AT&T's Data Systems Group with a series of networking products — including intelligent DOS and Unix systems protocol processors — that add TCP/IP support to AT&T's 6300 microcomputer line.

"We now offer TCP/IP functionality from DOS and OS/2 all the way through our full 3B line," said Harry King, an AT&T spokesman.

Making deals

The agreement with Boxboro, Mass.-based Micom follows a recent similar connectivity agreement with San Francisco's Orion Network Systems, Inc., which provided AT&T with LU6.2 software for the 3B processor family.

"AT&T is following the same general trends as everyone else" by implementing de facto standards on its systems, said David Passmore, a principal at Fairfax, Va., consulting firm Network Strategies, Inc. Users are demanding that systems support TCP/IP, LU6.2 and Open Systems Interconnect, and companies that lack the expertise to incorporate those protocols are going to third parties, he added.

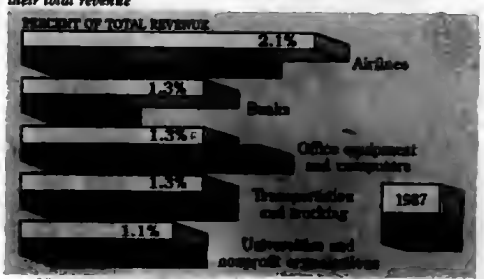
The addition of such protocols "won't make users say, 'Gee, let's go out and buy AT&T micros,' " but rather provides "a plus for people already interested" in the vendor's products, Passmore said.

The boards and processors for the Unix, DOS and OS/2 versions are slated to be available next month and should be priced around $1,500, King noted.

Airlines, banks are top telecom spenders

Top telecom spenders in 1987

Industries with largest telecommunications budgets as a percent of their total revenue



INFORMATION PROVIDED BY AN INTERNATIONAL COMMUNICATIONS ASSOCIATION SURVEY OF 178 MEMBERS
CW CHART

BY ELISABETH HORWITT
CW STAFF

Airlines, banks and office equipment and computer manufacturers had the largest telecommunications budgets last year, considered as a percentage of total revenue, according to the International Communications Association's (ICA) annual survey of its members (see chart at left). The national users organization defines telecommunications as both voice and data communications.

Banks spent 1.3% of their total revenue on telecommunications last year, compared with

Continued on page 42

Users pick five ISDN services

BY ELISABETH HORWITT
CW STAFF

WASHINGTON D.C. — The vendor branch of the ISDN Users Forum recently started work on networking specifications for five Integrated Services Digital Network (ISDN) applications that were submitted by the users' branch of the National Bureau of Standards (NBS)-sponsored organization.

The five applications are universal financial system access, incoming call management, automatic callback, encryption and addressing.

The goal of the vendor branch, which is called the ISDN Implementors Workshop, is to reach agreement on a consistent set of protocols for providing each of these applications across different vendors' ISDN networking equipment and services, according to Shukri Wakid, chief of the NBS's Advanced System Division and ISDN Users Forum chairman.

Continued on page 43

Inside

- ICIA handbook offers solutions to managerial problems. Page 43.
- Ethernet cards for PC AT, PS/2 out. Page 44.
- Toshiba portables get expansion unit. Page 44.

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Nolle

CONTINUED FROM PAGE 41

sec. data service in the Yukon is a good satellite application because the cost of building microwave towers or running fiber optics all the way up there for a small number of users is clearly unreasonable.

But as traditional satellite networks are made up of large dishes linked in a point-to-point fashion, VSAT networks typically include one large earth dish that broadcasts out to VSATs in many locations.

Pros and cons

Because VSATs are smaller and less expensive to install and operate than other satellite dishes, they can provide major upfront and ongoing savings over both terrestrial services and traditional satellite networks. VSATs can also make wideband communications affordable to small sites whose data transmission needs are too small to justify any other type of networking service.

VSAT networks provide the most significant benefits for the type of application that requires that information be broadcast from a central hub out to many smaller sites. One very good VSAT application is direct broadcast satellite (DBS), which is the transmission of information such as stock market reports or news to a relatively large number of stations at one time.

A number of large chain stores have employed DBS/VSAT for video applications such as employee briefings. One user in the Southwest employed VSAT to gather cash register data from a host of convenience stores, some of which were definitely in the fringe area of the telephone system.

If there are so many VSAT applications, what's the danger in renewing the market optimism of the early 1980s? Overselling. Some very respectable studies published on VSAT economics did things like compare VSAT costs with terrestrial or packet network costs based on a "hypothetical" user network that just happened to involve only cities on the perimeter of the continental U.S., maximizing line mileage. In this worst-case network, VSAT was cost-effective, but such a network is hardly representative of user needs.

Overeager vendors are not helping things by recommending VSAT when terrestrial alternatives are both available and less expensive. One Atlanta-based company was considering a VSAT linkage when activity was low and every city involved was covered by local public packet service access. Unhappy customers who feel they have been deceived will not do the market any good.

The truth is that many of the reasons users found satellite data transmission less than satisfactory in the early 1980s still apply. Users didn't like satellite delay.

Although it is true that most VSAT systems have streamlined their own error-correction protocols, most communications protocols in use today — IBM's Systems Network Architecture, for example — provide error correction and flow control acknowledgements that can really bog down a satellite link.

"Spoofing" the protocols at both ends can eliminate the need to send acknowledgements over the link, but this can be expensive. Vendors point out that some applications aren't particularly delay sensitive, but try telling that to the user.

Another big question is whether satellite services can continue underselling terrestrial services if the carriers start trying to muscle into the VSAT market with lower prices. This is a likely scenario, given the current glut of fiber-optic cabling bandwidth along with ISDN's future promise of low-cost access to carrier services.

Computers aren't for everyone, and neither is VSAT. Applications for VSAT that address genuine limitations in the terrestrial projection of communications services are secure investments for users. Applications that address what are likely to be temporary shortcomings in communications services to particular areas may also be reasonable, if the user calculates in the likelihood that terrestrial services may be a more viable option sometime in the future.

Nolle is president of CIMI Corp., a communications consulting company based in Haddonfield, N.J.

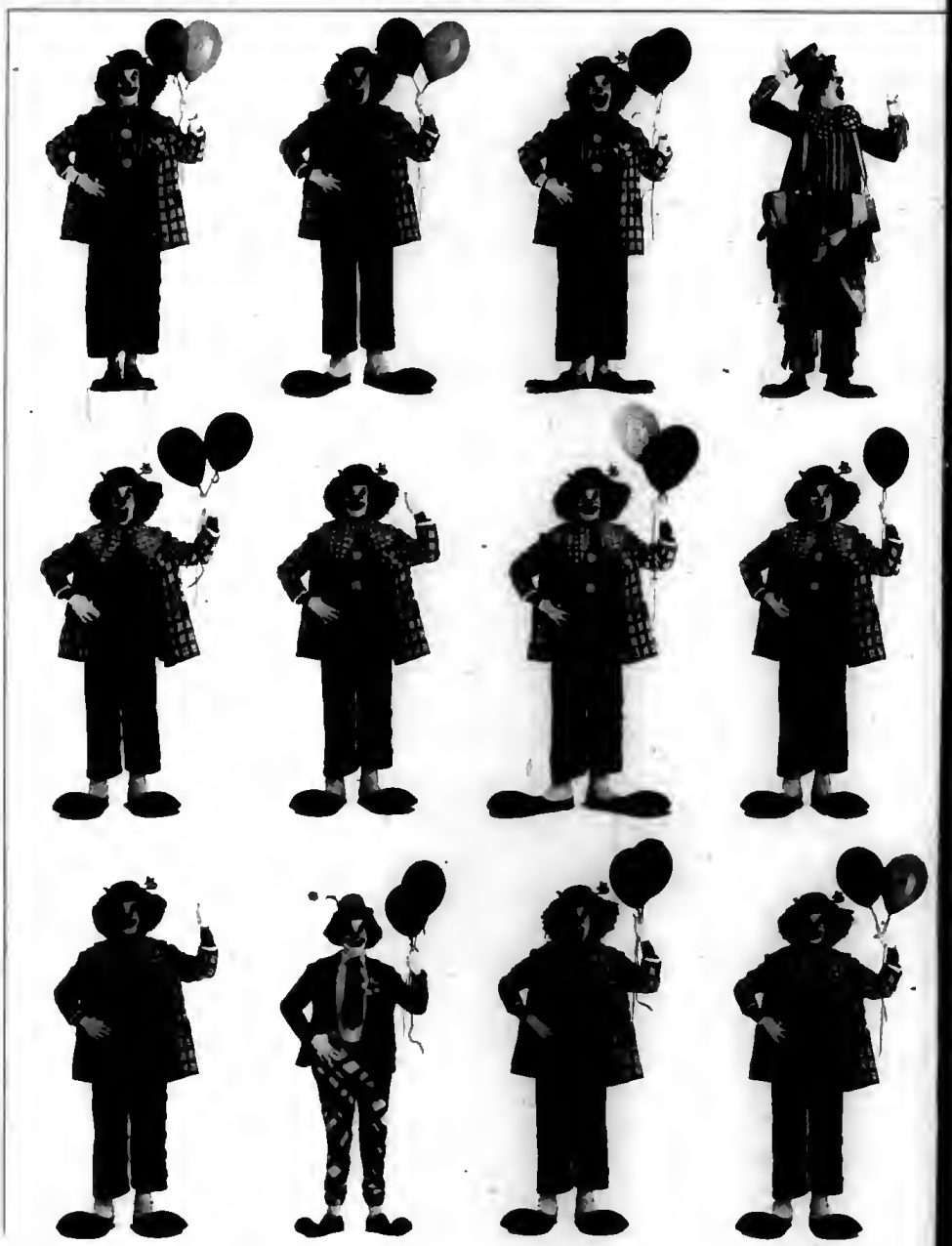
Telecom

CONTINUED FROM PAGE 41

only 0.6% in 1986, the users group's survey found. This vaulted banks into second place among 22 industries ranked in terms of percentage of revenue spent on telecommunications. The banking industry was ranked 16th in 1986, according to the ICA.

The survey found that service industries are expecting the most growth in telecommunications spending, projecting a telecommunications budget increase of 18.3% from 1987 to 1988. A 4.4% increase in telecom expenditures was projected for this year among the 22 industries surveyed, the organization said.

Among the industries with the lowest telecommunications budgets as percentage of revenue were: pharmaceutical companies at 0.3%, natural resources at 0.3% and utilities at 0.2%. Government agencies' telecommunications budgets took the biggest plunge, from 1.3% of total revenue in 1986 to 0.2% in 1987, the report said.



BIT BLAST

ICIA book answers miffed managers

Why aren't your sales higher? How can you befter retain employees? What is the best way to handle rapid growth? The answers to these and more management puzzlers can be found in the **International Communications Industries Association's** *ICIA Personnel Management Handbook*, which offers a number of solutions and suggests programs to keep them from recurring. The book costs $50 for members; $75 for nonmembers. It is available from the ICIA, 3150 Spring St., Fairfax, Va. 22031.

As was announced in November at Comdex/Fall '87, **IBM** will deliver the latest version of its network software, PC LAN Program 1.3, by the end of this month. Version 1.3 is a release for the IBM PC-DOS user and offers a number of new features for the administration and security of local-area network server resources. It costs $255.

Attendees at the recent Democratic National Convention in Atlanta were kept in touch with the outside world through an on-line news and information service that was developed by Rockville, Md.-based **Dialcom, Inc.** The service boiled down political news from more than 40 national publications and delivered that information to personal computers on the convention floor.

Business telecommunications costs, which have been steadily declining since AT&T's divestiture, held steady in the first quarter of this year, primarily because of a 10% boost in interstate private-line rates, according to **McGraw-Hill Information Systems Co.** This hike offset declines in toll and WATS services that the three major long-distance carriers instituted during the same period, the information service said.

Timeplex, Inc., a supplier of integrated voice, data and image networking, recently announced plans to support the emerging standard for Synchronous Optical Network (Sonet). Timeplex said it believes Sonet will become the standard for optical transport above DS-3 (T3) transmission rates. Sonet was developed to create a worldwide optical interface, along with associated signaling and transmission techniques, as the basis for global, high-capacity networking.

Rob Held has been named president and chief executive officer of **Chipcom Corp.**, a Waltham, Mass.-based maker of Ethernet network products. Held previously served as a vice-president at **Gen-rad, Inc.**

Level One Communications and **Mitel Corp.** have inked a pact under which they will jointly develop and second-source advanced transceivers for the T1 services and Integrated Services Digital Network markets. Both companies said they intend to accelerate development of very large-scale integration circuits for voice and data communications.

Cognos Corp. and **Access Technology, Inc.** have announced a technology partnership in which Access will develop a software bridge between Cognos's 20/20 spreadsheet software and Powerhouse application development language on Digital Equipment Corp. VAX/VMS systems. The 20/20 Database Connection is slated for year-end availability.

Let's talk about relational data bases.

But first, find the clown with the red nose, top hat and no balloons.

If you picked the first clown from the right on the top row, you didn't need the help of a relational data base system.

Of course, real-life business problems are considerably more complicated. That's why IBM, the leader in relational data base technology, offers a wide range of products to work with a full range of hardware, from workstations to midrange and mainframe computers.

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ISDN services

CONTINUED FROM PAGE 41

This will be a difficult and complex task since ISDN provides a lot of options for each aspect of networking — for example, how ISDN B and D channels are allocated to support an application, Wakid said. "Getting people to concur will take more than one meeting. I hope some real stuff will be done before a year, but that is just a hope," Wakid added.

This first meeting of the Implementors Workshop drew more than 200 representatives from firms such as AT&T, Northern Telecom, Inc., Apple Computer, Inc., IBM and the Bell operating companies.

September deadline

The ISDN Users Workshop — the Forum's other branch — will continue to come up with applications to propose to the Implementors Workshop. The group plans by early September to provide more complete specifications for the initial five services, according to W. Edward Hodgson, the workshop's chairman and manager of computing and communications at Westinghouse Elevator Co.

"We need to spell out what we want" in areas such as diagnostics and automatic rerouting, Hodgson said.

Approximately 100 applications have been suggested by different members of the Users Workshop. For example, incoming call management, which displays information about a caller on the user's screen, was proposed by the United Services Automobile Association. And the U.S. Navy is advocating that implementors work on security-related applications such as user authentication.

The initial five applications will provide "test runs to check out the operation and flow of data between the Users and Implementors Workshops," Hodgson said.

NEW PRODUCTS

Local-area network hardware

Two 16-bit Ethernet cards for IBM Personal Computer ATs and Personal System/2 machines are now available from **IMC Networks Corp.**

PCnic was designed for the PC AT, PS/2 Model 30 and PC AT bus-compatible systems. The **PCnic II** card is for use with the PS/2 Models 50, 60 and 80. Both cards adhere to the IEEE 802.3 standard for thick and thin Ethernet and will operate under Novell, Inc.'s Netware. The cards reportedly support up to 64K bytes of memory.

PCnic can be installed at any one of 64 I/O addresses and costs $495 for a 16K-byte version. A 64K-byte version costs $525. PCnic II can be installed at any one of 256 I/O addresses and costs $520 in a 16K-byte capacity and $550 for a 64K-byte configuration.

IMC Networks, Unit 3E, 1342 Bell Ave., Tustin, Calif. 92680. 714-259-1020.

Connect Computer Co. has announced the **Wonunder II** expansion unit for Toshiba Corp. portable computers.

The product expands the capabilities of the Toshiba 5100, 3100 and 1200 by enabling users to add two full-size personal computer expansion cards, the vendor said.

The unit reportedly offers support for various network interface cards, including Arcnet, Ethernet, Proteon, Starlan and token-ring. The cards reside in the Wonunder II desk top unit, which connects to the back of the Toshiba machine. Versions of the Wonunder II for Zenith Data Systems and Epson America, Inc. portable computers are currently under development, according to the company.

The Wonunder II costs $479.

Connect Computer, Suite 270, 9855 W. 78th St., Eden Prairie, Minn. 55344. 612-944-0181.

Network services

An audioconferencing service that can reportedly link up to 200 locations nationwide is being offered by **Metromedia Long Distance**.

The service, **Metromedia Long Distance Conference Calling**, can include board meetings, marketing promotions, sales training meetings, workshops and seminars as well as other corporate and business functions. The product is targeted to compete directly with the AT&T Alliance conference service.

As an introductory offer, the company will provide new customers with a 30-minute conference call for up to six locations at no charge for setup and connections. The offer is applicable to any standard dial-in conference call placed until Aug. 31.

Metromedia Long Distance, 215 E. 67th St., New York, N.Y. 10021. 212-606-4300.

Modems/ Multiplexers

Telebit Corp.'s T2000 IBM Systems Network Architecture/ Synchronous Data Link Control (SNA/SDLC) modem has been selected by **Techpoint, Inc.**, a supplier of turnkey point-of-sale systems, to provide high-speed dial-up SDLC communications links between remote IBM Personal Computers and a central-site IBM host.

The modem is part of an integrated point-of-sale (POS) application developed to support IBM 4683 POS terminals in specialty store environments.

Remote T2000 modems are used in asynchronous mode to obtain on-line credit authorization data from local and remote credit institutions. The unit is reportedly capable of delivering SNA/SDLC communications over poor-quality dial-up telephone lines at speeds up to 19.2 bit/sec.

The Telebit T2000 costs $1,495. A card version in a rack-mount system configuration costs $2,190.

Telebit, 1345 Shorebird Way, Mountain View, Calif. 94043. 415-969-3800.

Benchmark sleight of hand

Even the Debit/Credit test may not be able to settle the issue of fair comparisons

BY TOM SAWYER

MIS customers have long sought a way to make useful comparisons between database management systems before purchasing them or porting them to new hardware. Lately, two trends in on-line transaction processing are making DBMS benchmark comparisons less difficult.

First, both hardware and DBMS software vendors are running a common benchmark — Debit/Credit and its derivative, TP1. Second, more vendors are having the benchmark audited by an independent party.

Still, even these developments leave some gaps for those users trying to make apples-to-apples comparisons.

Two for the price of one

The original Debit/Credit benchmark emanated from a Bank of America National Trust & Savings procurement for its automated teller network. It was first described in a Tandem Computers, Inc. technical report in 1985. The paper produced two landmarks: a pricing algorithm and the Debit/Credit standard.

The pricing algorithm gives customers and potential customers a new financial measurement, the cost of one transaction per second (TPS). This measurement is obtained by taking the total hardware cost of the measured configuration along with five year's worth of maintenance and software costs. This total is then divided by the measured transaction per second.

In the original procurement, this method produced a range of $40,000/TPS to $400,000/TPS.

The calculation adds reality to the hardware configuration: A vendor is less tempted to use hardware to improve performance if the cost is shown with the TPS rating.

The second landmark of the Bank of America procurement was the Debit/Credit benchmark. It consists of a standard transaction run against an implementation that must meet certain requirements: The transaction must update the account of the person using the teller terminal, the cash balance of the branch controlling the terminal and the balance in the terminal itself. It must then add a record to a history file. These files are often abbreviated to ABTH for account, branch, teller and history.

For the benchmark, the user's account must be in a different branch than the branch controlling the teller terminal in 15% of the transactions.

This requirement has two purposes: It serves as a reality check — all customers use different machines now and then — and it forces some measurement of system overhead in a distributed implementation.

In the Tandem Debit/Credit benchmark, for example, measurements were taken on one-, two- and four-node systems. The

JERZY KOLACZ

- **Cost of a transaction per second**
- **Specifications too onerous for vendors**
- **A "hot spot" test**

Sawyer is a senior consultant at Codd and Date Consulting Group in San Jose, Calif.

effects of distribution create a slight decline in throughput as nodes are added to the system.

Apples-to-oranges

Many vendors have used the Debit/Credit and ET1 benchmarks to demonstrate transaction performance. In the best of all possible worlds, all Debit/Credit benchmarks would be directly comparable.

But in fact they are not.

Three of the better documented benchmarks, the Tandem "Top Gun," the Relational Technology, Inc. "Ingres Silver Bullet" and the Sybase, Inc. benchmark, demonstrate the difficulties in making comparisons.

Part of the problem is caused by the definition of the Debit/Credit benchmark. The benchmark is quite specific on some points and completely silent on others. For example, it is very specific about the scaling of the database relative to the transaction rate. But it is mute on the technique of submitting messages to the measured machine.

The size of the ABTH database must be scaled to the highest transaction rate desired. A system with a TPS rating of 1 — one transaction/sec. — must have account, branch and teller files with 100,000, 10 and 100 records, respectively. To measure 100 TPS, the system must have files of 10 million, 1,000 and 10,000 records. If the scaling is not done for all three files, the cache buffering schemes will keep the relatively small branch and teller files in memory.

The Sybase VAX results were obtained using a database of 100,000 rows. Thus, the results are not comparable to either Tandem's or Relational Technology's.

The scaling affects only the account, branch and teller files as far as the measured implementation. The history file is touched only at its end; thus there is no point in scaling it during the benchmark. However, the benchmark calls for a scaled quantity of disk to be devoted to the history file for pricing purposes. This quantity is large enough to expose exorbitantly priced disk storage.

TRANSACTION generation and response time measurement present the biggest divergence between vendors.

The history file also serves as a "hot spot" test. Each transaction must add a record to the end of the history file, so any system with simple locking will cause all transactions to serialize on this end-of-file lock.

Troublesome side effects

Some parts of the Debit/Credit specifications are so onerous, vendors dilute or ignore them. For example, the Debit/Credit standard calls for simulated terminals that generate messages with 100-sec. think-time intervals.

Thus, a 1 transaction/sec. system must have 100 automated teller terminals with their associated control blocks, and so on.

Tandem simulated the terminals, reducing the think-time to 10 seconds and generating 2,560 terminals instead of 25,600. The company based this change on the fact that the original benchmark was written prior to the acceptance of terminal concentrators. No other vendor has actually attempted to simulate the terminal portion of the benchmark. The Debit/Credit

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standard makes no mention of the transaction arrival pattern. Most vendors use a driver machine that submits a transaction as soon as the previous one is acknowledged. This arrival pattern is the easiest for meeting the response time requirement. There are no queues, and no part of the system is idle.

Tandem had the most rigorous simulation of the arrival of transactions. Its implementation had an exponential distribution with a mean time of 10 seconds.

This is the most difficult distribution to process since many messages have very short think-times and some have very long think-times. Thus, waves of messages flood the system and are followed by troughs that do require all the hardware. However, when it came to measuring the TPS rating, Tandem chose to measure response times of less than two seconds for 90% of the messages.

THE USE OF independent auditing adds credibility to the benchmark results. The results may not be comparable with other benchmarks, but customers are assured that the stated results were in fact achieved.

Relational Technology used Transmission Control Protocol/Internet Protocol on an Ethernet, sent a message as soon as the prior returned (no think-time) and measured TPS at the 95% level for one second as required by Debit/Credit.

Transaction generation and response time measurement currently present the biggest divergence between different vendors' implementation and reporting. The benchmark is quite explicit on the measurement of response time and the number of terminals simulated. It says that response time starts when the message is accepted at the measured machine and ends when it is sent. And it specifies that 95% of the transactions must be completed in one second or less.

The benchmark calls for dual logs — each log record is written to two independent log files. Tandem not only used dual logs but wrote dual copies of account, branch, teller and history files. Relational Technology did one measurement with dual logs.

The major requirements of the Debit/Credit benchmark are the following:

- Terminal handling is on the measured machine.
- The database is scaled to the highest transaction rate.
- Two copies of the log file are maintained.
- The cost per TPS is calculated.
- At least 95% of transactions must be completed in less than one second.

Believable statistics

The use of independent auditing adds credibility to the benchmark results. The results may not be comparable with other benchmarks, but customers are assured that the stated results were in fact achieved.

In addition, the auditor's report should list every deviation from the Debit/Credit standard. Where the standard is obscure, the report should point out the implementation chosen. For each claim made about the benchmark, the auditor's report should show how it was verified.

The report should be part of the vendor benchmark material. It should also be available directly from the auditing organization. Accepting the vendor's claims without examining the auditor's report is like choosing a movie based on the review clips in the advertising — you really don't know what else the reviewer said.

No comparisons

Today's Debit/Credit benchmarks are not comparable. The three mentioned above are among the best documented to date; they allow you to see why the numbers are not comparable.

In general, the trend in reporting is positive. If the buying public insists on complete reporting, independent auditing and closer adherence to at least the stated portions of the Debit/Credit benchmark, then vendors will comply.

Completeness is the style they would choose if the marketplace would let them. •

Scores

Since Tandem's standard-setting 208 transaction/sec. scored in the spring of 1987, other vendors have made moves to get their database systems on record. This spring, IBM boosted DB2's performance level to a score of 186.

In May, Relational Technology achieved 104 transaction/sec. running its Ingres database management system on a particular series of Sequent processors.

In July, both DEC and Oracle published new figures: DEC claims more than 100 transaction/sec. for its new DEC TP, and Oracle pushed its Version 6.0 to a record-breaking 265.

MANAGEMENT

TAKING CHARGE

James Connolly

Data entry needs love, too

"Remember the little folks" is a concept that always sounds nice and is the purpose of life for the exceptionally good people among us, like Mother Teresa. But the rest of the world needs an occasional reminder — OK, a constant reminder — that life can be tough.

The problems of anyone working in an MIS shop will never match those of the impoverished residents of Calcutta's slums. Yet MIS managers must keep in mind that there are people in their small part of the business world for whom job and home look nothing like the workweeks and lives of the managers, who in one recent survey were found to earn annual compensation ranging from $68,000 to more than $500,000.

As well-deserved as those pay scales may be, they do put into perspective the results of a survey by the Data Entry Management Association (DEMA). While the DEMA was justly encouraged by the number of companies that are improving working conditions for data entry workers, the results should also make more highly paid managers, programmers and analysts appreciate the data entry people sitting in the partitioned area near the computer room and clicking away at their keyboards.

Continued on page 50

Guide steers members along telecom course

BY JEAN S. BOZMAN
CW STAFF

CHICAGO — Meeting for the 71st time, IBM users group Guide, Inc. focused its recent week-long program here on telecommunications. Underscoring that theme, IBM Vice-President Ellen Hancock, general manager of IBM's Communications Systems Division, delivered a keynote speech reportedly declaring the company's intent to embrace international standards.

"The focus this time is on connectivity," said Guide President Gary S. Gesme, a systems software manager at Deere & Co. The idea of choosing a featured topic, Gesme said, is one that he plans to continue throughout his two-year term.

The Guide meeting drew 4,500 attendees, including directors of Japan's new Guide/Share users group.

While the press is barred from attending Guide sessions, users reported that Hancock promised near-term support for X.400 in IBM products shipped in the U.S. Up to now, the CCITT X.400 standard has been embraced in Europe but not in the U.S. Hancock has said before that IBM would introduce X.400 in the U.S. when the firm felt enough user demand to justify the move [CW, Nov. 2, 1987].

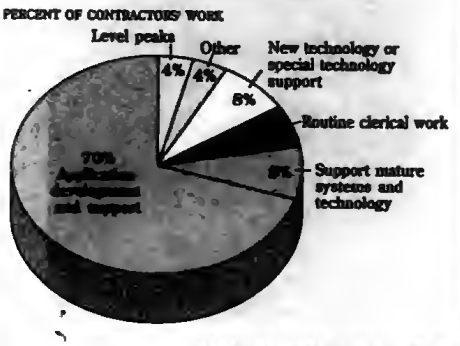
Hancock also reported that two IBM development groups, one in Rome and another in Palo Alto, Calif., were working to include Open Systems Interconnect international standards in

Continued on page 51

Data View

Contractors' time

A survey of 40 organizations that use or supply temporary systems employees shows that contractors are hired mainly for application development and support



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First in government

Barnes crafts federal CIO operation prototype

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Step by step, inch by inch, Janet L. Barnes is starting to build the first chief information officer operation in the federal government.

The site is Pension Benefit Guaranty Corp. (PBGC), the pension insurance agency that hired Barnes nearly a year ago as director of information resources management and CIO.

Barnes says the addition of the CIO title — the first in the federal sector — was a senior management decision based on the recognition that information processing is vital to the agency's mission. "I was very pleased when I knew that the executive management here was thinking that way," she says. "That was a very big part of the attraction of this job for me."

Starting from scratch

But PBGC is just beginning to think about involving information systems in its business strategy. "I'm still trying to understand the business," Barnes says. "I'm going to be learning a lot so I can figure out how to formulate an information strategy. I can't say we have one today."

In her typically methodical way, however, Barnes is preparing for the full-fledged CIO role by first strengthening the traditional MIS operation, which has a $5 million budget. "I've been trying to structure an organization that's well positioned to carry out the CIO function when it's been defined," she explains.

Barnes and PBGC have taken several steps to lay this foundation for the new CIO functions:

- The first step was to name a CIO to begin plotting the information systems strategy from a corporate perspective. The CIO position was placed at the MIS level rather than at the corporate staff level.
- The MIS department is taking a more proactive approach "to identify opportunities where we can apply our expertise," Barnes says.
- Barnes has taken a new look at the budget to identify all the information processing activities in the agency. All information systems contracts and spending — including training — must now be cleared through Barnes' office.
- A major project is under way to create a corporate database to make it easier for employees to examine cases and handle public inquiries. Now, employees must look in three or four different data systems to obtain all the information about a single pensioner.

Continued on page 51

PROFILE
Janet L. Barnes

Position: *Director of information resources management and chief information officer, Pension Benefit Guaranty Corp.*
Mission: *To build the U.S. government's first CIO office.*

Software firms keen on benefits

BY ALAN J. RYAN
CW STAFF

ATLANTA — Companies in the computer software and services industry are spending up to 28% of their payroll budgets on employee benefits including paid holidays, vacations, insurance and health care.

That was the finding of a recent study by Vertex Management, Inc., which also found that the most costly benefits to the 42 companies surveyed are vacation time and health care.

Although the sampling of companies was small, Vertex President Joseph Blumberg said nearly all of the software and services industry's major players responded to the questionnaire. Many of the firms surveyed are members of ADAPSO, he added.

'Most significant benefit'

In the industry overall, Blumberg said it was notable that 81% of the companies surveyed are providing 401K plans for their employees. "This seems to be the single most significant benefit provided by firms in the industry," he said.

Also of note, he said, is that there appears to be a trend of companies taking a more aggressive position with respect to the way they structure health care plans for both employees and dependents. This year, Blumberg said, while the greatest number of respondents still require a $100 deductible, there are medical deductibles at some companies of $300, $500 — and even $1,000 at one of the firms surveyed.

The study also found that companies involved in remote computing services, professional services and systems integration typically spend between 11.7% and 27% of their payroll dollars on benefits. Companies selling software products may spend nearly 29% of their payroll on benefits.

Of that, paid holidays account for 2.3% to 5.4% of the total, vacation time ranges from 2.2% to 9.1% and personal leave accounts for 0.1% to 1.8% of the total payroll at the companies polled.

Life insurance expenses, according to the respondents, range from 0.03% to 1.2% of the total. Some companies surveyed also offer dependent life insurance, which costs them between 0.01% and 0.08%.

Sick time and preventive medical and dental benefits have become lucrative selling points for recruiting employees, and the companies are paying for it.

Wellness overlooked

However, wellness programs, which contribute to an overall savings in the health care area statistically, are not significantly represented among the companies questioned, Blumberg add-

Continued on page 50

CALENDAR

AUG 7-13

Urban and Regional Information Systems Association Conference: Mapping the Future. Los Angeles, Aug. 7-11 — Contact: Tom Palmerlee, executive director, Urban and Regional Information Systems Association, 319 C St. SE, Washington, D.C. 20003.

National Association for State Information Systems Annual Meeting. Arlington Heights, Ill., Aug. 7-11 — Contact: National Association for State Information Systems, Inc., P.O. Box 11910, Lexington, Ky. 40578.

Interex, North American Hewlett-Packard Business and Technical Users Conference. Orlando, Fla., Aug. 7-12 — Contact: Interex, Conference Department, 660 Almanor Ave., Sunnyvale, Calif. 94086.

World Congress III, Computer-Assisted Valuation and Land Information Systems. Cambridge, Mass., Aug. 7-12 — Contact: Sarah J. Zebrauskas, Lincoln Institute of Land Policy, 1000 Massachusetts Ave., Cambridge, Mass. 02138.

Trell Users Group Meeting. Cambridge, Mass., Aug. 8-9 — Contact: Intex Solutions, Inc., 568 Washington St., Wellesley, Mass. 02181.

Structured Development Forum X. San Francisco, Aug. 8-11 — Contact: Ted Michels, Lawrence Livermore National Laboratories, P.O. Box 808, L-308, Livermore, Calif. 94550.

Macworld Expo. Boston, Aug. 11-13 — Contact: Mitch Hall Associates, P.O. Box 860, Westwood, Mass. 02090.

AUG 14-20

Computer Associates International, Inc., Systems Software Conference. Nashville, Aug. 14-19 — Contact: Barbara Peacock, Computer Associates International, 711 Stewart Ave., Garden City, N.Y. 11530.

Share 71 General Meeting. New York, Aug. 14-19 — Contact: Share, One Illinois Center, 111 E. Wacker Drive, Chicago, Ill. 60601.

Impactless Printing Conference. Monterey, Calif., Aug. 15-17 — Contact: Conference Registrar, Institute For Graphic Communication, 375 Commonwealth Ave., Boston, Mass. 02115.

Information Security Managers Symposium. Hilton Head, S.C., Aug. 15-17 — Contact: MIS Training Institute, 498 Concord St., Framingham, Mass. 01701.

International Logic Programming Conference, Fifth Symposium on Logic Programming. Seattle, Aug. 15-19 — Contact: Logic Programming Research Group, School of Computer and Information Science, 313 Link Hall, Syracuse University, Syracuse, N.Y. 12210.

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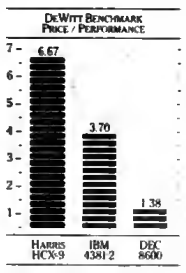

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Connolly

CONTINUED FROM PAGE 49

Some of the good things cited by the DEMA included increasing use of flex time, four-day workweeks and a 10% gain in the number of companies offering data entry operators three breaks per day.

Yet there still were companies reporting that they gave no breaks or sick days to operators. The DEMA also noted a continuing drop in the average number of operators per company, down from 40.7 in 1985 to 34.5 in 1987.

How different are the lives of data entry operators and MIS managers? Pay for MIS directors continues to grow and, in the extreme, can soar past the $40,000-per-month mark. The highest monthly pay reported for a data entry operator in the DEMA study was $2,100 in 1987, which was down from $2,750 in 1985. The average monthly salary for a top data entry operator rose from $1,434 to just $1,490 during those same two years. Simple math translates that into an average annual hike of less than 2% on top of an already-low base pay.

This does not mean that high school dropouts who half-heartedly tap a keyboard should be given lifelong financial security. Rather, the DEMA study should remind managers that their many loyal data entry operators, who already face the dangers of tedium and job insecurity, may be living only slightly above the poverty level.

It may help those managers understand why it is so tough to get and keep good operators and may help the operators win at least a few pennies more when 1989 pay levels are set.

Connolly is *Computerworld's* senior editor, management.

Benefits

CONTINUED FROM PAGE 49

ed. "Many companies provide informal programs, but only 14% of the respondents had a formalized program," he said.

According to the study, paid sick leave accounts for 0.13% to up to 4.61% of the total payroll at some firms — short-term disability ranges from 0.12% to 1.42% and long-term disability accounts for 0.07% to 3.69%.

Broad health care range

Employee health care costs range from 0.45% of payroll to 3.69%, the study found, while dependent health care costs range anywhere from 1.10% to 7.66%.

Dental care benefits cost companies that offer them from 0.03% to 1.15% for employee care and 0.22% to 1.19% for dependent care. Prescription drugs cost companies from 0.03% to 0.25% of payroll, and education assistance outlays range from 0.05% to nearly 1%, according to the study.

Profit sharing can account for from 0.74% to as much as 7.14% in some companies, the study found, while pension plans account for the expenditure of 0.85% to 9.04% of the total payroll. Thrift or 401K plans take up anywhere from 0.08% to 9.77% at companies offering these services. All the firms surveyed have employee populations in excess of 200 people, Blumberg said.

First

CONTINUED FROM PAGE 49

• Once the central MIS operation is stabilized, Barnes plans to study whether s centralized or decentralized MIS structure is most sppropriate for PBGC's future.

In essence, Barnes is asserting control over the first half of her title, director of information resources management (IRM), before tackling the second. IRM is a philosophy that calls for the management of information as s valuable resource [CW, June 6].

"The CIO function definitely encompasses what IRM is all about, but it also stresses the broad, strategic view" of information systems, Barnes says. "The CIO is business-oriented. What direction is PBGC headed in? How do we provide better service to our retirees and pensioners, and how do we use information to help us do that?"

Much of the CIO literature talks about using information systems for competitive business advantage or profits. In the public sector, she points out, it is more appropriate to ask how information systems can improve service to the public.

Barnes is in a good position to compare MIS life in the public and private sectors. Before joining PBGC, she worked in systems development at Arthur Young and MCI Communications Corp. and helped to start s small MIS consulting business.

The biggest difference between the private sector and government is the lack of flexibility that managers have to hire and reward employees, she says.

In the private sector, Barnes says, she could hire a promising applicant virtually the same day, but in the government, hiring requires a time-consuming evaluation process for all competing candidates. "The idea is to make sure there is a totally fair evaluation of everyone. It's hard to argue with that, but it does add time to the process and there's competition out there for data processing professionals," she says.

Hiring is also hampered by the government's image of dull work, Barnes says. "Hard-chargers say they don't want to work for the government, but this is an exciting place to work. So how do we let everybody know?"

And once she gets strong performers, she complains, government red tape makes it hard to give them bonuses, salary increases or loftier job titles. But Barnes views these problems as challenges to be overcome with creative approaches, not insurmountable obstacles. "Who says my job is supposed to be easy?" she adds.

Personnel problems aside, Barnes speaks with excitement about creating a strong CIO operation and the support she gets from PBGC executives such as Deputy Executive Director Joseph A. Vasquez Jr. "Just seeing how upper management is so motivated and energized stimulates you to do your best. It's almost addictive," she says.

Guide

CONTINUED FROM PAGE 49

IBM code, users said. In addition, Hancock hinted at s new kind of pictorial interface for IBM network management software such as Netview. IBM's current Netview product uses typed messages to show system alerts and line failures.

Sears, Travelers detail strategies

Telecommunications was also stressed in a session on Sears, Roebuck and Co.'s telecommunications strategy. Sears Communications Network, Inc. President Gary Weis described Sears' development of one of the country's largest IBM Systems Network Architecture networks, connecting 120,000 logical units and 9,000 network nodes nationwide. [CW, Aug. 10, 1987]. Another session described Travelers Insurance Co.'s telecommunications strategy.

But while these these telecommunications features may have been s draw, most users questioned said they attended the Guide meeting to learn more about their own specialties.

One of Guide's largest projects focuses on IBM's DB2 relational database. The DB2 sessions drew as many as 400 of the 4,500 attendees at the Guide meeting, users said.

"Many people are still evaluating whether to move into DB2, and others haven't started up their DB2 production systems yet because they were waiting for DB2 Version 2, which was just released," said one Northeast MIS manager st Guide. "Our meetings allow them to see what planning and preparation is involved in getting into DB2 and to learn what some of the pitfalls might be."

Gesme described Guide's mission as protecting the valued relationship between the IBM mainframe users registered in Guide and their primary computer vendor, IBM. "What we're doing is not a secret at all," Gesme said last week. "But we still view our partnership with IBM as the key thing that keeps us in business. We will do nothing that would endanger that relationship in any way."

Proof of Guide's close relationship with IBM, Gesme said, is that IBM customer letters now indicate which product features stem from Guide requirements. In addition, IBM sends hundreds of IBM staffers to each Guide meeting to answer user questions and demonstrate products, be said. "We're not asking IBM for product availability or release dates," Gesme said. "But we are keen on understanding their long-term direction."

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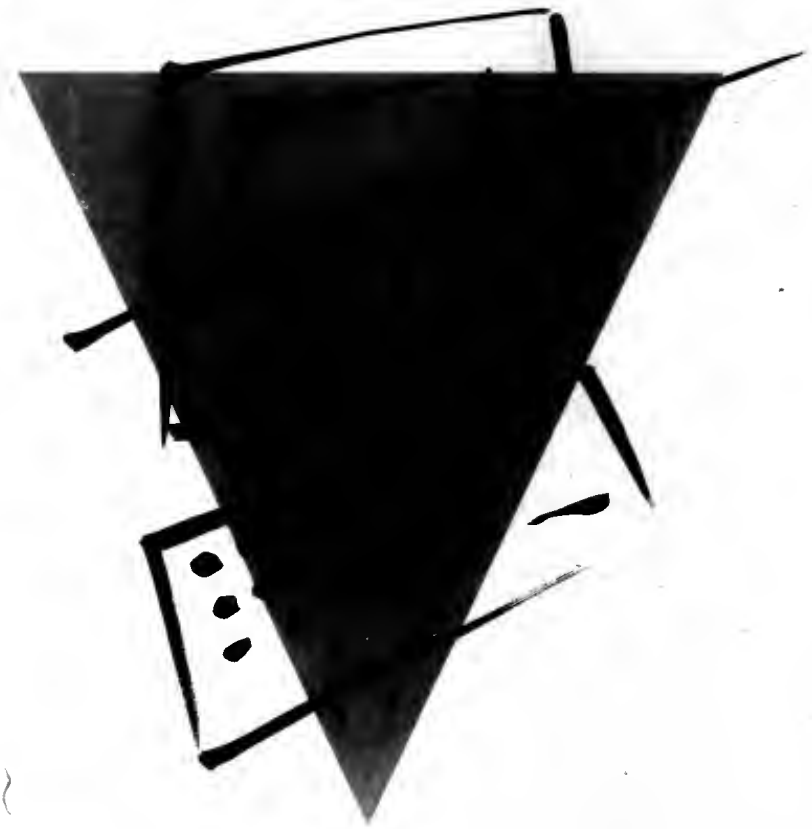

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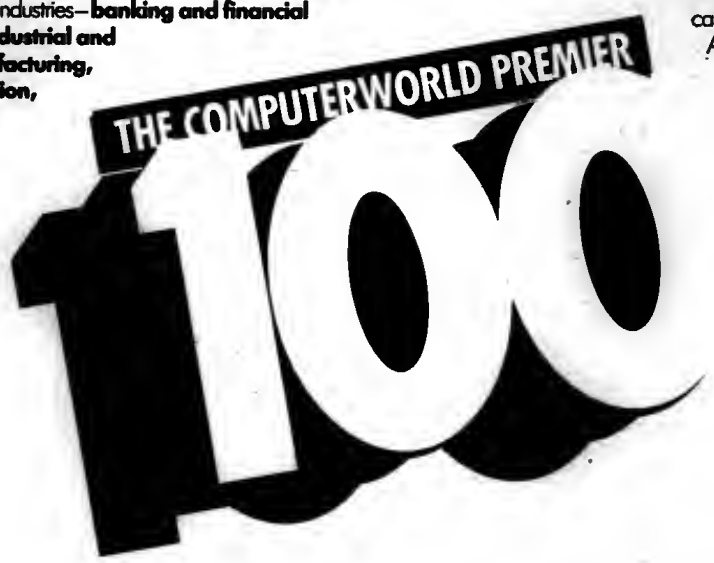

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COMPUTER INDUSTRY

INDUSTRY INSIGHT

William Zachmann

OSF interface holds promise

It has been reported that the Open Software Foundation (OSF) is issuing a request for technology for a Unix graphical user interface. If all this is what it seems to be, that is good news for Unix and good news for the industry.

The OSF, of course, includes IBM, DEC and Hewlett-Packard. Its purpose is to define a standard Unix that would be effectively independent of AT&T. It was formed at least partly in response to AT&T's alliance with Sun. Other vendors were concerned that the arrangement, which includes a 20% equity investment in Sun by AT&T, would give those two vendors a competitive advantage over others.

A major focus of that concern was future enhancements and extensions to Unix. Since AT&T, with Sun, intended to retain control over such future specifications, other vendors felt left out. There was concern that AT&T and Sun might use that control as a competitive weapon, much as IBM has done with Systems Network Architecture in communications.

IBM and DEC, of course,

Continued on page 58

Foreign sales fuel growth spurt

Compaq, Microsoft, Stratus report double-digit revenue leaps for quarter

BY MICHAEL ALEXANDER
CW STAFF

Robust international sales helped propel Microsoft Corp., Compaq Computer Corp. and several other companies to double-digit growth rates in revenue and net income last quarter.

Firms reporting last week for the quarter ended June 30 echoed earlier comments from Apple Computer, Inc., Amdahl Corp., NCR Corp. and Storage Technology Corp. [CW, July 25].

Companies reporting results last week included the following:

Compaq. President and Chief Executive Officer Rod Canion attributed the company's double-digit leaps in revenue and net income to continued strong worldwide demand for its high-performance Intel Corp. 80386-based products. Compaq's reported revenue for the first six months was $896 million and net income was $105 million.

Microsoft. Microsoft has lost its luster on Wall Street in recent weeks because of disappointing earnings. Despite a 74% jump in its fourth-quarter earnings and record revenue for the fiscal year, the company's shares fell last week in national over-the-counter trading.

Revenue was $590.8 million, with net income of $123.9 million for the year. The gains, however, were less than expected because of shifting demand from operating systems to applications software.

"Packaged products sold through our retail channels here and abroad accounted for 66.2% of our revenues for the year," said Frank Gaudette, Microsoft's chief financial officer. "They are expected to continue to grow at a faster rate than our [operating system] royalty revenues, which will cause increases in the cost of goods sold and marketing expenses."

Stratus Computer, Inc. "Stratus' balanced combination of distribution channels — including direct sales, alternate channels, major distributors and VARs — contributed to our sustained growth in revenues and earnings," said William E. Foster, president and CEO.

Continued on page 58

1988 second-quarter earnings

The microcomputer industry is still booming, but MSA, Convex and Network Systems take a dip

	Revenue April through June (in millions)	Percent change from 1987[1]	Net income April through June (in millions)	Percent change from 1987[1]
AST Research	$135.8	215	$7.7	266
Britton Lee[2]	$7.5	40	$0.01	—
Compaq	$456.8	71	$58.6	91
Computer Sciences	$299.3	9	$11.7	24
Convex[3]	$25.2	51	$1.2	(45)
Daisy Systems[4]	$29.9	24	$1.7	—
Management Science America	$68.9	(17)	$5.8	(69)
Microsoft	$170.5	71	$30	73
Network Systems	$31	1	$2.9	(41)
Relational Technology	$30.2	75	$7.5	300
Rexon	$41.6	52	$1.4	(48)
Stratus Computer	$62.9	47	$6.7	73
Sungard Data Systems	$29.9	37	$2.7	29
Tandon	$81.1	40	$6	32
Teradata	$29.8	92	$3	349
Texas Instruments	$1.568	14	$91.8	39

[1] Parentheses indicate decrease
[2] Reported loss of $4.2 million in 1987
[3] Includes extraordinary credit of $100,000 as a result of tax benefits from operating loss carryforward
[4] Reported loss of $10.5 million in 1987

CW CHART

Tandem's plunge sets off ripples

BY J. A. SAVAGE
CW STAFF

CUPERTINO, Calif. — The damage done to Tandem Computers, Inc. last month when it divulged sharply reduced earnings for its third quarter may not be permanent, but for now, the psychological damage is taking its toll in the investment community.

Third-quarter profits fell 33%, although sales grew 27% during that time. Tandem blamed the shortfall on hardware and software delays.

Release C-10 operating system software for Tandem's proprietary system, Guardian, was expected in May, but the release date has been pushed back until sometime this month.

High impact felt

That delay hampers high-end sales of Tandem's otherwise popular mid-range CLX systems, because without the new release, the CLX can only be configured for two-processor systems instead of the entire line of two-, four- and six-processor models. The new release is required for its Nonstop SQL relational database management system.

In addition, a spokeswoman for the company said that Tandem stopped shipping its PSX workstations, manufactured by

Continued on page 56

Ex-Cullinet officer leads Aussie invasion

BY CLINTON WILDER
CW STAFF

FRAMINGHAM, Mass. — If you are a little-known $150 million Australian computer services company trying to attack the U.S. market, what do you need?

Computer Power Group Ltd. thinks it has the answer: A well-known U.S. computer executive with 30 years of experience at IBM, Data General Corp. and Cullinet Software, Inc.

David L. Chapman may not look like Crocodile Dundee or Breaker Morant, but he recently accepted the challenge of leading his mates from down under into the wilds of the booming but fragmented U.S. market for professional services.

Chapman, deposed as Cullinet chairman in May with the return of founder John Cullinane, will be building an organization from the ground up rather than attempting the financial and technology turnaround of a well-entrenched mainframe database management vendor.

Computer Power is not new to the U.S. It expects to receive about $70 million in U.S. revenue this year and actually started business here in 1972 by selling the first minicomputer Cobol compiler to Digital Equipment Corp.

Through its acquisitions of three small U.S. services firms, the Melbourne, Australia, company has 1,000 U.S. employees, but its corporate reporting structure is one very large ocean away. Computer Power's U.S. headquarters in the Boston suburb of Framingham are still so skeletal that Chapman and Chairman Roger Allen make their own coffee.

But Chapman, 53, downplayed the contrast of his recent move with his other career stops. "I won't be managing as large an R&D function, but the rest is still solving problems for customers," he said. "The fun of all this will be how we augment the various technologies to help our customers be more productive."

Computer Power's ambitious goal, according to Allen, is to become one of the top handful of worldwide computer services providers. He expects to keep company with the likes of Electronic Data Systems Corp., Computer Sciences Corp., Arthur Andersen & Co. and France's Cap Gemini Sogeti. To do that, Computer Power needed a major beachhead in the U.S.

Computer Power Group's Chapman

"Our track record in Australia was pretty irrelevant to users here," said Allen, 41, a former MIS executive who founded Computer Power in 1968. "We needed to put the company on the map in the U.S., and we'd been looking for some time for the right person to drive that strategy."

"This looks like a winning combination," said Bob Therrien, a software industry analyst at Paine Webber, Inc. "Chapman is a very creative guy — a great conceptualizer. Roger is the hard-nosed manager."

Chapman's first task is sifting through resumes; he plans to hire 15 to 20 executives.

Computer Power has previously acquired U.S. professional services providers Cornell Computer Corp. in Plainview, N.Y., Chicago-based Applied Information Development, Inc. and New York-based Cap-CPP Services, Inc., which it renamed CP Information Systems.

Tandem's

FROM PAGE 55

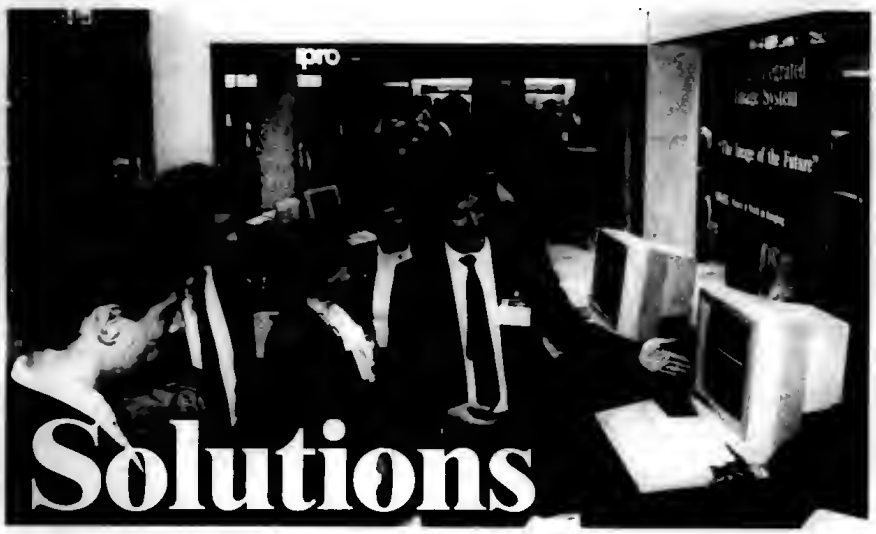
Wyse Technology, Inc., in March because of unspecified manufacturing bugs and did not ship them again until late May.

While not predicting what will happen in 1989, the spokeswoman said that for the next quarter, the company expects earnings per share to be lower than in fourth-quarter 1987; however, revenue is expected to be up.

"I don't think the damage is permanent," said John Jones, an analyst at San Francisco-based Montgomery Securities. "But as they continue to disappoint us [on Wall Street] on revenue, they're going to have very large earnings swings." Jones also said the psychological damage inflicted by the third consecutive quarter of lower than expected earnings is very high.

He attributed Tandem's low profits to two market forces, saying, "As they get bigger, they have to grow slower. And they're starting to look like a minicomputer company, and minis are growing slower."

> "I DON'T think the damage is permanent."
> JOHN JONES
> MONTGOMERY SECURITIES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IN BRIEF

CA lets 'em off

Computer Associates International, Inc. dropped its proprietary-document theft charges against **Duquesne Systems, Inc.** in an out-of-court settlement. CA halted claims against Kenneth Smartt and James Holland, the two former CA employees now working at Duquesne. Smartt and Holland granted court costs and other undisclosed considerations to CA. Earlier this year, law enforcement agents seized proprietary CA documents in Duquesne's Vienna, Va., offices in a CA-authorized raid.

Sorbus CEO retires

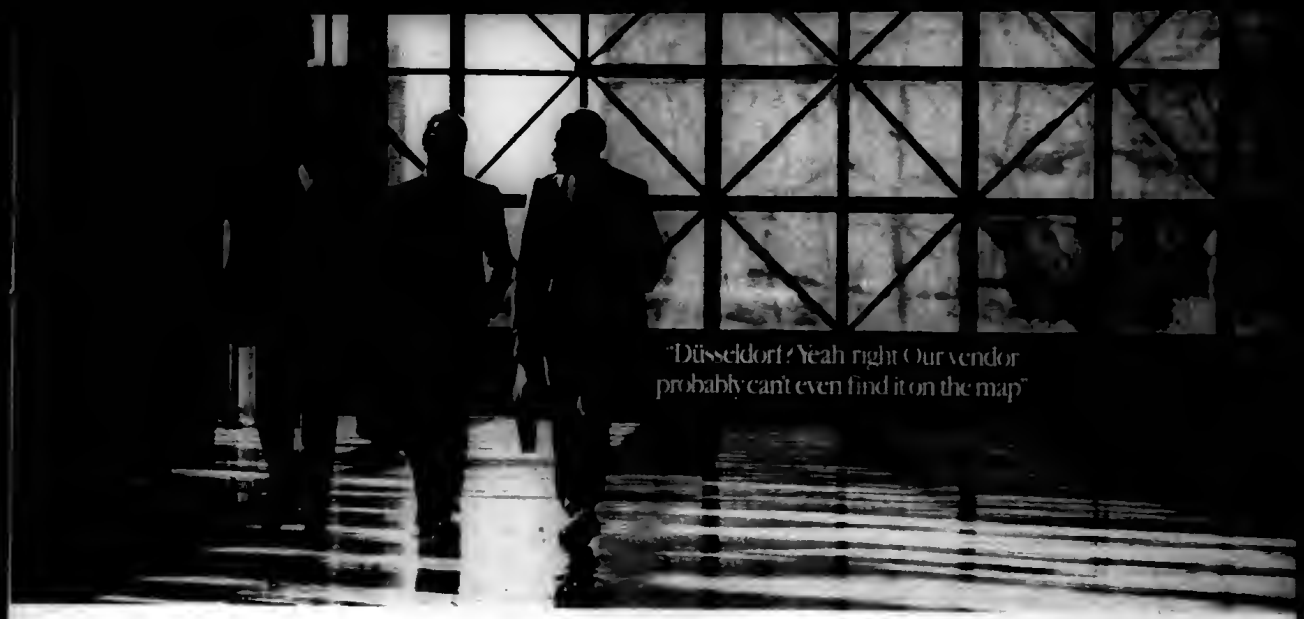
Sorbus, Inc. veteran Chairman and Chief Executive Officer Louis J. Ross announced his retirement last week. He will continue to serve as a consultant to Sorbus parent **Bell Atlantic Corp.** on computer maintenance and will continue to chair Bell Atlantic's European computer maintenance unit. Sorbus President Thomas Vassiliades will take over as chairman, and Timothy M. Connolly, formerly president of Bell Atlantic Mobile Systems, Inc., will be the new Sorbus president.

Military decoration

The Air Force has awarded a $6.9 million contract to Huntsville, Ala.-based **Integraph Corp.** for a full suite of computer-aided software engineering tools for mechanical and electronics applications. The software will be used for a variety of design engineering, manufacturing and testing services.

Speaking internationally

Computer Sciences Corp. (CSC) has carved off its **Infonet** data communications unit into a separate company, which will be owned by CSC and the telecommunications administrations of France, West Germany, Sweden, Belgium and Spain. El Segundo, Calif.-based CSC said it expects other countries to join the company.



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Growth spurt

CONTINUED FROM PAGE 55

Convex Computer Corp. A successful transition to a new product line and better control of overhead helped generate record revenue and a profitable second quarter, the company said. The company reported quarterly revenue of $25.2 million, a 51% increase. Net income was $1.2 million, including an extraordinary credit of $100,000 resulting from tax benefits attributable to operating losses carried forward from prior periods.

Management Science America, Inc. The Atlanta software supplier weathered a takeover attempt by Computer Associates International, Inc. last month, but there was little reason to celebrate. For the first half of the year, revenue was $131.9 million, compared with $136 million in the same period in 1987.

"We currently expect the earnings of the first half of 1988 to be stronger than the second half of the year," President William M. Graves said in a release.

Relational Technology, Inc. At the end of its first year as a public company, Relational Technology's revenue was $87.4 million, up sharply from $46.6 million the prior year. Net income tripled to $7.5 million.

Texas Instruments, Inc. In a letter to its stockholders, TI reported that the expanding economy in Asia and Europe contributed to the strongest semiconductor market growth in four years.

Jerry R. Junkins, chairman, president and CEO, credited productivity gains, cost reductions and higher prices for semiconductor memory components for substantially improving TI's profitability.

"Worldwide demand for memory remains strong," Junkins said. "TI is increasing its 1M-bit capacity to meet our customers' growing needs. We anticipate some easing of 1M-bit DRAM shortages during the second half of 1988 as the industry brings additional capacity on-line."

Teradata Corp. Bring in new customers, expand product capabilities and strengthen the management team, and your company may wind up its first year as a public company with sharply higher revenue and earnings for the quarter and fiscal year. At least that is what Teradata said it did while marketing its fault-tolerant modular database machines.

The company reported that revenue for the year was $89.5 million, a 91% increase. For the year, net income was $8.5 million, more than five times greater than last year's. "The numbers were a slight upside surprise," said Roxanne Googin, an analyst at Needham and Co. "What we're seeing is broader acceptance of the company products in a wide variety of industries."

Britton Lee, Inc. President and CEO John C. Cavalier said strong federal systems and international sales returned the company to profitability for its second quarter. The company posted a net loss of $78,000 on revenue of $14.9 million for the six-month period.

Zachmann

CONTINUED FROM PAGE 55

have not previously been big supporters of Unix. IBM initially offered Unix only because it was required for some major U.S. government procurements. DEC executives have a long history of saying rather negative things about Unix in public. So there has been considerable skepticism about the firms' motivations in helping to found OSF.

Still, many other vendors with a clear commitment to Unix were not at all happy about the AT&T-Sun arrangement. The stated motivation for OSF certainly struck a responsive chord in the industry. Moreover, both IBM and DEC are starting to take Unix much more seriously as well.

OSF's open request for graphical user interface technology is particularly significant. A key element of AT&T and Sun's intended Unix extensions is Sun's Open Look graphical user interface. AT&T's choice to adopt Sun's Open Look as "standard Unix" was a major element in other vendors' concerns.

The transition away from character-mode command interfaces to a standard graphical user interface on the user's desk is one of the most important changes taking place in the industry. Whichever graphical user interface emerges as the dominant standard will be tremendously important in defining the software environment of the 1990s.

If the OSF means what it says, then the door should be open for AT&T and Sun to propose Open Look, just as other vendors may sponsor their own alternatives — DEC Windows, Microsoft and IBM's Presentation Manager, perhaps HP's New Wave, and so forth. The OSF request at least makes it possible that discussions leading to some sort of reconciliation may be started.

Battling between different Unix graphical user interface standards will only slow the acceptance of Unix and strengthen the position of MS-DOS and OS/2 on the desk top. Even if a single Unix interface standard is agreed upon, however, it is unlikely to be broadly successful if it cannot at least offer the option of compatibility with the Windows Presentation Manager.

If users must choose between a DOS and OS/2 standard on the one hand and a Unix standard on the other, Unix is the more likely to lose.

Zachmann is a senior vice-president at International Data Corp.

COMPUTER CAREERS

Auditors wield growing clout

Broad exposure within organizations can open numerous career paths

BY KATY GURLEY
SPECIAL TO CW

Back when general ledger books and sharp pencils ruled the day, the electronic data processing (EDP) auditor was a specialist. Not anymore. Today, with most firms' financial data stored in computer systems, general auditors have had to put aside their pencils and learn computer technology. EDP auditing has come into its own.

"In the past, and maybe in some places still, the EDP auditor was the specialist. But now, the EDP auditor is the generalist and the general auditor is the specialist — specializing in manual systems," says John W. Lainehart, director of the U.S. Department of Transportation's Office of ADP and Technical Control.

Lainehart and others agree that while there is room for individuals to grow in EDP auditing, the field also provides an excellent springboard to other areas of information systems.

Expanding horizons

This springboard arises because EDP auditors are often asked to audit computerized areas of the business other than finance, such as inventory, says Michael Donahue, senior manager at accounting firm Price Waterhouse in Washington, D.C.

In reviewing systems, EDP auditors also are exposed to various aspects of their company's business, which can help them to move on to manage line-business areas such as accounting or payroll, according to Jack Schwartz, managing director of recruiting firm Source EDP in New York.

In the Northeast, annual salaries for EDP auditors can range from about $30,000 for those with two years of experience to about $55,000 for someone with seven years of experience, experts say. Salaries tend to plateau in the $50,000 range for those who remain EDP auditors without moving into management, other MIS jobs or other areas, Schwartz says.

Observers express disagreement regarding the demand for EDP auditors. Some members of the Electronic Data Processing Auditors Association (EDPAA) say there is a surplus of EDP auditors with five or more years of experience and a lack of ones with two to five years of experience. But Schwartz, who routinely places EDP auditors, says demand is high on all levels. He says the salary plateau may mean there are more veterans than less experienced practitioners, however.

The ideal EDP auditing candidate must be certified by the EDPAA. "I love to get somebody who is certified with about two years of experience who has already been pretrained," Donahue says.

According to EDPAA guidelines, to be certified means that the EDP auditor must have five years of experience as an EDP auditor; 120 hours of courses in finance with three years experience as an auditor, at least one of them in EDP auditing; or two years of college finance courses with three years of EDP auditing experience.

Auditors are officially certified through the EDPAA, which has 114 chapters, about one-third of them overseas. Certification is subject to renewal every three years.

EDPAA qualifications

To help establish qualifications, the EDPAA has defined the duties most EDP auditors are expected to perform. They include reviews of the following:

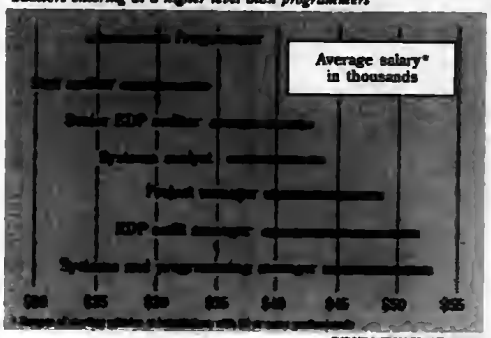
- **Applications systems.** Do system controls produce information in a timely, accurate and complete manner?
- **Data integrity.** Is the data consistently recorded, accumulated and reported? Is it reliable?
- **Systems development life cycle.** Does the organization use a method that produces consistent results?
- **Application development.** Does the system meet user requirements?
- **General operational controls.** Are applications processed in a controlled and secure environment?
- **Security.** Has data processing management planned for accidental or deliberate loss or damage of data?
- **Systems software.** Is it installed properly? Do only authorized personnel have access to the system? Do any changes made provide an audit trail? Are appropriate control features included in that system's package?
- **Maintenance.** Are authorized changes to systems made in a controlled environment?
- **Acquisition.** Are organizational resources used economically in acquiring systems and services?
- **DP resource management.** Are DP planning, administrative and management practices adequate to reach goals?

Donahue says he thinks EDP auditing entails normal stress. The most taxing part is confronting management with problems discovered through an audit, such as fraud or waste, he says.

Gurley is a Wellesley, Mass.-based free-lance writer specializing in high technology.

Auditors' returns

Starting salaries for EDP audit personnel cover roughly the same range as those for systems and programming positions, with EDP auditors entering at a higher level than programmers



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We seek a talented developer with a strong background in building on-line and workstation applications that provide device-independent, object-oriented interfaces to data and graphics. Experience with windowing tools, medium-to-large databases, and mini or mainframe environments is preferred. You must have a strong professional history.

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The ROVER Technology Company
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The Protec Group Inc.
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Senior Computer Software Engineer wanted to analyze complex systems requirements; design, develop and implement Financial Telecommunications software systems and program Generators for UNISYS Large systems using ALGOL, DMS II, COBOL, GEMCOS, UNC, MPL, design real time simulators for message switching communications processor for Hewlett Packard Computers (HP7000); Requires B.S. degree in Electronics & Communications Engineering or Computer Engineering and two years experience in the job offered or two years related experience as a Computer Systems Analyst; $43,000.00 per year; 40 hours per week. Send resume to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #41188 "Employer Paid Ad"

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(207)773-4749

Senior Computer Software Engineer wanted to analyze complex systems requirements; design, develop and implement banking, financial and business systems using DMS II, COBOL, MICROFOCUS, WF, and Fourth Generation Language LINC (version 12.0) including CLASS Accounting module; Requires Bachelors Degree in Electronics & Communications Engineering or Computer Engineering and two years experience in the job offered or two years related experience as a Senior Computer Systems Analyst; $42,000.00 per year; 40 hours per week. Send resume to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #41388 "Employer Paid Ad"

Programmer: Will code, test, document, debug, and develop a software package to be installed in existing computer systems. Will maintain, document, and debug existing programs. Will use PRIMOS utilizing MIDAS files to accomplish necessary software modifications and enhancement of the DATAMANN system. Requires BS degree in computer science. Education to include coursework using PRIMOS and MIDAS files. Education to also include 1 course in relational databases. Education to also include 1 course in operating system. Hours: 8:00 am to 4:30 pm, 40 hours per week at $25,000 per year salary. Please send resume to: RJ/MIDAS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street-3 South, Chicago, IL 60605. Attn: ROBERT S. FELTON. Reference #V-IL 6457-F. AN EMPLOYER PAID AD

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HMO company needs a systems programmer with BS/MS CS, 5 years experience with MVS and other IBM software. Experience with IDMS helpful. Send resume to:

Caroline Thompson
John Hancock HealthPlans
1009 Bradbury Drive, SE
Albuquerque, NM 87106

Senior Computer Software Engineer wanted to analyze complex systems requirements; design, develop and implement banking, financial and business systems using DMS II, COBOL, MICROFOCUS, WF, and Fourth Generation Language LINC (version 12.0) including CLASS Accounting module; Requires Bachelors Degree in Electronics & Communications Engineering or Computer Engineering and two years experience in the job offered or two years related experience as a Senior Computer Systems Analyst; $42,000.00 per year; 40 hours per week. Send resume to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #41388 "Employer Paid Ad"

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Knowledge of Data Base Systems with several years of experience in ADR DATACOM/DB, IDEAL or other data base and 4GL system. Knowledge of Personal Computer word processors and spread sheet applications is desirable.

Position requires a minimum of 8 years Information Systems Analysis/Programming experience in an IBM environment. BS Degree in Computer Science or Business Administration is required; advanced degree is highly desirable.

• Aerojet ElectroSystems is located 25 miles east of Los Angeles in the San Gabriel Valley, and close to summer/winter resorts, affordable housing and several excellent universities.

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Lead Data Administrator

The Cleveland Clinic Foundation is currently seeking a seasoned data administration professional to plan, control and manage the data used as an information resource supporting the business objectives of our organization.

Major duties will include the development of logical data designs and structures to minimize redundancy and maximize compatibility of data; providing data modeling support of system development, and developing and maintaining the Institutional Data Model.

The individual we are seeking will have a degree in health care, computer science or business administration and at least 3 years of experience in data administration. Must have knowledge of technical issues involved in data administration, i.e., modeling, enterprise administration, data base theory, etc. Must have excellent communication, motivation and analytical abilities. Systems development skills are a plus.

This is a challenging position which will be responsible for helping us maintain our level of excellence. We offer a competitive salary, full benefits and opportunity for growth. For consideration please send resume to **Jennifer Popovics, Staffing Manager - Staffing Department, The Cleveland Clinic Foundation, One Clinic Center, 9500 Euclid Avenue, Cleveland, Ohio 44195.**

THE CLEVELAND CLINIC FOUNDATION

Sr. Information Systems Auditor

Due to internal promotions, Sierra Pacific Power Company has an immediate opening for a Sr. Information Systems Auditor.

Responsibilities include: identifying and prioritizing areas of EDP audit for the company, internal information systems consulting, developing audit programs, performing audits and supervising an Information Systems Auditor.

The ideal candidate will be a skilled professional with at least 5 years of EDP auditing experience and the ability to program in COBOL, Easytrieve and SAS. Academic achievement in Accounting and/or Information Systems and certification as a CPA, CIA or CISA are preferred.

Our environment features an IBM 3061K and 3083J running on the MVS/XA and the VM operating systems, supporting corporate-wide applications in Engineering/Construction, Customer Support and General Accounting.

We offer a top salary, relocation and benefits package. If interested, please submit resume, including salary history, to:

Auditor Recruiter,
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Applicant required to have BS degree in Computer Science, Mathematics, or Engineering with at least two years experience in ACP/TPF Applications Development. Education and experience will be found acceptable if applicant has a combination of education, training and experience found to be equivalent to a bachelors degree in Computer Science including at least two years experience in ACP/TPF applications development.

Salary will be $36K for 40 hour work week.

Interested applicants apply at the Texas Employment Commission, Dallas, TX J.O. Number 5424918. This advertisement was paid by an Equal Opportunity Employer.

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At Goal Systems, software developers direct the design, programming, testing, support and enhancement phases of product development. We are currently seeking creative, knowledgeable professionals to join our Development Team that have the following credentials:

- **Experience with IBM 370 Assembler language (in excess of 30,000 lines prior coding experience)**
- **Experience developing systems software on IBM or compatible mainframe equipment using CICS, VSAM, MVS, or VSE**

In addition, you should have concentrated expertise in at least one of the following:

- **CICS internals experience**
- **Strong knowledge of MVS or VM operating systems structure and flow**
- **Thorough knowledge of VSAM object formats including catalog structure**
- **Indepth knowledge of IMS or DB/2**
- **Previous experience in security, performance, or operations desired**

We offer a competitive compensation plan which includes a base salary plus an attractive commission plan and comprehensive benefits including medical, dental vision, life, and long-term disability insurance and generous profit sharing and 401(k) plans. For prompt consideration, send your resume and salary history in confidence to: **GOAL SYSTEMS INTERNATIONAL, INC., Human Resources Department-D1, 7965 North High Street, Columbus, Ohio 43235.** Principals only, no phone calls, please. An Equal Opportunity Employer M/F/H/V.

Goal Systems
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Sallie Mae, a $25 billion AAA-rated financial services corporation, provides a diverse array of financial products and services to the education credit community and financial market. As our nationwide network of services expands, automated data processing becomes increasingly vital. Our future competitiveness depends on our ability to upgrade and implement systems to manage our business—from loan processing to client support, marketing, and other corporate functions.

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ROCKY MOUNTAIN BANKCARD SYSTEM, INC.
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The Underwood Group, Inc.

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Requirements: college/technical degree with 3 years of experience in data processing including data base administration, or the development and implementation of data base applications. Will consider equivalent work without degree. Good interpersonal and organizational skills.

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Responsibilities include performing system analysis and design for new data processing systems or making significant revisions to existing systems in a Honeywell environment. In addition to studying and proposing conceptual design alternatives, individual will also present cost and time estimates. An ideal candidate would have at least six years of varied data processing experience and be proficient in both structured programming and structured system design techniques. Strong communication skills required.

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City of Peoria
419 Fulton St., Room 203
Peoria, IL 61602

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The Process Automation Business, Inc., a subsidiary of Combustion Engineering, Inc., (formerly Accuray Corporation) is seeking several Senior Software Engineers to meet our increasing business demands. The qualified candidates will have a B.S. degree in CIS Engineering plus 5 years applicable experience, preferably with real time systems. A background with objective C or other object programming is a must. The ideal candidate is one who has applied object oriented software techniques toward design of real time systems. This position offers outstanding career opportunities with a highly professional, technical/manufacturing company in the Columbus, Ohio area. Combustion Engineering offers a variety of associate programs, plus outstanding benefits with very competitive salaries. Send resume to: Combustion Engineering, Inc., 850 Ackerman Rd., Columbus, Ohio 43202, attention: Human Resource Representative, M.S. 2120.

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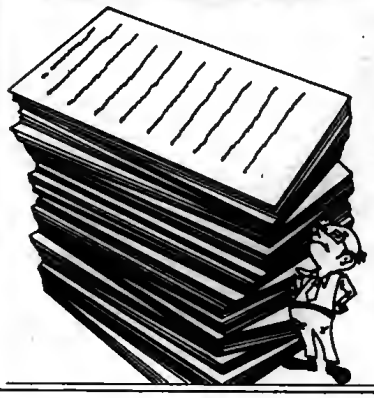

We are currently seeking qualified candidates who have a bachelor's degree and 2-5 years experience with IBM 30XX's, COBOL, OS/MVS JCL, VSAM, TSO/ISPF. Some positions require IDMS, ADS/O, CICS. Insurance experience is a plus. We offer competitive salaries and benefit packages, a fitness center and an excellent work environment at our Louisville-based headquarters.

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Individual will lead several activities which support the IS strategic plan including planning for new hardware and software technology, conduct technology evaluations and make recommendations, and assist in developing architectural plans. Should possess a B.S. in a related field, extensive technical planning or technical support experience and excellent oral and written communications skills.

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Individual will be responsible for the integration of the Information Systems plan with the company's strategic and operational plans, coordinate development of the Information Systems plan, ensure integration of application requirements and technology planning. Ideally, you will possess a B.S. in a related field, extensive planning experience and excellent communication skills. Previous experience developing IS plans in conjuction with business plans is preferred.

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- * CICS
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- * IDMS ADS/O
- * DB 2
- * DL-1
- * VAX/COBOL
- * PACBASE
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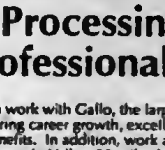

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MARKETPLACE

IBM controller market chaotic

Noncache 3880s finally stabilize; full-function 3990 shipment delayed

BY ROBERT J. CALLERY
IDC FINANCIAL SERVICES CORP

After experiencing declines in value of more than 40% from January to March of this year on the used computer market, the noncache IBM 3880 Model 3 control units have rebounded slightly to regain some of their lost worth.

With current retail prices approximately 33% of list price, these control units appear to be short-term solutions for end users who are reluctant to place orders for the currently unavailable IBM 3990.

The 3880 Model 3 control units, which support IBM's newest 3380 Model J and K disk drives, are readily available on the secondary market; however, they do not support any of the advanced functions announced with the new 3990.

This year held promise for IBM and its customers, as both were anticipating availability of the new family of control units, the 3990s, which were announced in September 1987 along with 3380 Model J and K disk drives.

The new 3990 Model 3 cache controller offers advanced functions that provide significantly improved performance benefits over the existing 3880 cache controller family.

In anticipation of the expected availability of the new controller and improved performance associated with it, end users embraced the high-capacity 3380 Model K. Shipments of the Model K boomed as MIS shops looked to save floor space and gain performance.

Two factors — the expected availability of the new controller and availability of the new disk drive — caused used prices of the older noncached 3880 controllers to decline substantially.

Shipments delayed

However, a twist has developed. On April 5, IBM quietly announced that shipments of the new full-function 3990 Model 3 cache controller, originally expected to ship in the third quarter, would be delayed until the first half of 1989. The company cited problems with the new microcode as the reason for the delay. To appease customers interested in purchasing 3880 cache controllers, IBM reduced the purchase price from 5% to 15%, depending on the model.

Many customers, including those who were not using cache controllers on a large scale, intended to buy cached 3990s. Now, however, 3990 shipment dates are no longer in sight. Such long lead times have led to diminishing demand for the 3380 Model K, since not all of the associated performance benefits are realized without the 3990.

However, IBM has stated the cachless 3990 Models 1 and 2 will ship in the third quarter of this year. For customers wishing to take a 3990 Model 3 without the cache functions and install the cache and microcode when they become available, IBM is offering a 2% discount. Nevertheless, some IBM customers are passing on this offer and filling their short-term needs with inexpensive 3880 Model 3s.

On the secondary market, the supply of IBM's only available cache controller, the Model 23, has remained limited.

IDC Financial Services Corp. research indicates that the 3880 cache controllers constitute approximately 20% of the installed base of controllers. Because of the limited acceptance of this product, availability on the secondary market has remained limited. With no subsequent product available supplying any cache functions, there is no reason for a user to dump an installed 3880 Model 23.

On July 1, IBM once again reduced the purchase price and the month-to-month rental costs of the Model 23s. When the 3990 and new 3380s were announced last September, IBM reduced the month-to-month rental rates an average of 64%. This time, price cuts across the board ranged from 5% to 15%, and rental prices were lowered an additional 35%.

This move is primarily intended to give IBM customers an inexpensive alternative. The company realizes it has to offer its client base an attractive option or risk losing business to third parties or plug-compatible competitors. This offering makes the sting of long lead times for 3990s a little easier to bear.

For more information, contact IDC Financial Services Corp.'s Terri LeBlanc at 617-872-8200.

IBM storage products

Current retail fair market value

	Date shipped	IBM list price	Percent of list price
3880 Model 1[1]	4Q 1979	$51,000	18%
3880 Model 1[2]	4Q 1979	$51,000	25%
3880 Model 3[1]	1Q 1981	$51,000	26%
3880 Model 3[2]	1Q 1981	$51,000	35%
3880 Model G23	4Q 1984	$177,500	76%
3990 Model G3	NA[3]	$200,000	NA

[1] Values represent machines with serial numbers between 10444 and 20000
[2] Values represent machines with serial numbers above 20000
[3] Not applicable; slated to ship in the first half of 1989

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XT Model 089	$1,350	$1,400	$1,150
AT Model 099	$2,050	$2,350	$1,800
AT Model 239	$2,550	$2,650	$2,125
AT Model 339	$3,100	$3,250	$2,900
PS/2 Model 30	$1,525	$1,650	$1,300
PS/2 Model 50	$2,275	$2,375	$1,900
Compaq Portable I	$750	$800	$575
Portable II	$2,200	$2,375	$1,650
Portable III	$3,000	$3,100	$2,700
Portable 286	$2,250	$2,350	$1,675
Plus	$1,100	$1,100	$900
Deskpro 20-MHz	$1,200	$1,450	$975
Deskpro 286	$2,475	$2,475	$1,800
Deskpro 386	$5,100	$5,100	$4,600
Apple Macintosh 512	$725	$825	$595
512E	$825	$925	$650
Plus	$1,100	$1,125	$850
Plus 20-MHz	$1,350	$1,350	$1,350
SE	$2,000	$2,300	$1,925
SE 20-MHz	$2,450	$2,600	$2,500
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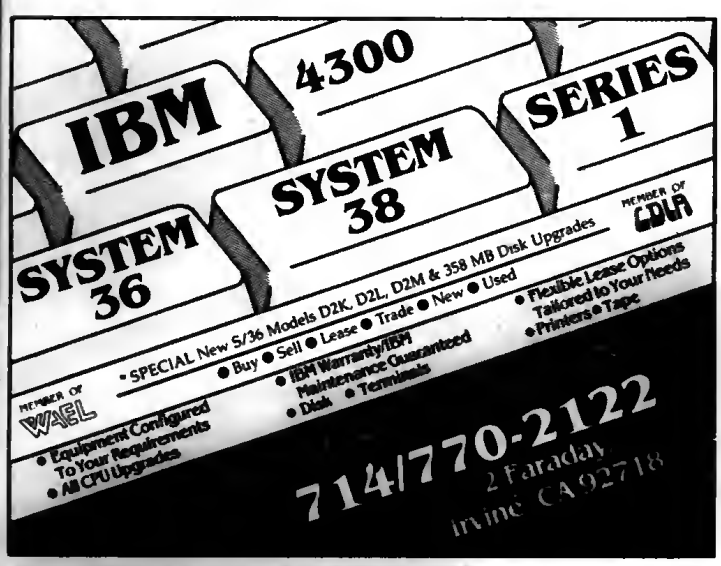

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BIDS WILL BE PUBLICLY OPENED AND READ AT THE TIME, DATE AND PLACE SPECIFIED

At 11:00 a.m. on Thursday, August 18, 1988, Department of Housing Preservation and Development, 75 Maiden Lane, Room 7000, 7th Floor, New York, N.Y. 10038.

For providing Keypunching and Verification Services for the Division of Code Enforcement.

Blank bid forms, the Contract Documents and further information may be obtained by applying in person, to the Director of Operations, Division of Code Enforcement, 100 Gold Street, Room 8192, 8th Floor, New York, New York, where specifications, Contract Documents, Bonding and Insurance Requirements may be obtained.

A pre-bid conference will be held on Thursday, August 11, 1988, 100 Gold Street, New York, New York, Room 9189 at 2:00 p.m.

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REQUEST FOR PROPOSALS
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The Financial Information Services Agency of the City of New York is seeking proposals from management consulting firms for work required in connection with the development, design and implementation of an automated contract reporting system for the city of New York Office of the Comptroller and Office of Management and Budget. Copies of the Request for Proposals may be obtained from Ms. Marlene Cintron at the Financial Information Services Agency at 111 Eighth Avenue, 13th Floor, New York, NY 10011 or by phoning Ms. Cintron at 212-206-3052.

A Proposers' Conference will be held at 10:00 A.M. on August 18, 1988; the deadline for receipt of proposals is 10:00 A.M. on September 7, 1988.

Please note, both the Proposers' Conference and the submission of proposals will take place at the Office of the Comptroller. Further details may be found within the Request for Proposals.

FEDERAL RESERVE BANK OF PHILADELPHIA
REQUEST FOR PROPOSAL ("RFP") FOR ELECTRONIC PAYMENT PROCESSING PILOT SYSTEM

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All requests must be received no later than 5:00 p.m. Eastern Daylight Time, August 11, 1988.

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The Financial Information Services Agency of the City of New York is seeking proposals for 3270 displays/printers for use in the City's Payroll Management System. Copies of the Request for Proposals may be obtained from Ms. Marlene Cintron at the Financial Information Services Agency at 111 Eighth Avenue, 13th Floor, New York, NY 10011 or by phoning Ms. Cintron at 212-206-3052.

A Proposers' Conference will be held at 11:00 A.M. on August 9, 1988; the deadline for receipt of proposals is 5:00 P.M. on August 16, 1988.

Further details re the conference, specifications and proposals submission may be found within the Request for Proposals.

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TRAINING

Confronting false expectations

Management's perceptions of training can differ greatly from reality

BY NAOMI KARTEN
SPECIAL TO CW

Ask a group of end-user trainers about their chief frustrations and the subject of expectations invariably comes up. Most trainers have to contend with users' false hopes and assumptions about the training process. Although these perceptions may be widespread, trainers can take steps to diminish them.

Here are four expectations and assumptions trainers frequently face and the reality of the situation:

• **Everyone can benefit from computer training.** Some managers assume that the sooner everyone on staff is trained, the better, no matter whether the staff members need to use a computer in their work. These managers assume that employees will retain what they have learned indefinitely, whether or not they use it.

Reality: Computer learning is quickly followed by computer forgetting if people do not have an opportunity to use what they have learned. Training is most effective when it precedes computer use as closely as possible.

This means users should not attend personal computer training if they will not have access to a PC; they also should not take a class three months before an upcoming assignment if they can take it one month beforehand.

By keeping trainers informed of upcoming needs, department heads can help ensure that training is available when staff members can benefit from it most.

Once trained, employees who are given management-sanctioned time to practice will be more likely to boost their productivity — and do so sooner.

• **Training leads to instant productivity.** Managers of user departments often expect that simply attending a class will make their subordinates capable of generating immediate productivity gains. When training doesn't lead to quick improvement, management sees the training itself as responsible.

Reality: It is reasonable for managers to assume that computers *can* contribute to productivity improvements. But initially, productivity may actually decrease while newly trained users gain experience in using their computers to do tasks that they used to perform manually.

• **Developing a new course is a snap.** This is a common assumption, and one frequently made by those who have never developed course material. Trainers regularly receive requests for courses in complex topics such as desktop publishing. When they fail to deliver, users often view the training staff as unresponsive.

Reality: Developing a new course is complex and time-consuming. In fact, course development may take anywhere from 30 to 200 or more hours for each hour of class time, depending on the course format, the complexity of the subject, the materials available and the experience of the developer.

• **Training is a nice perk.** Many trainers have had employees enrolled in their classes who have no reason for being there. Ask them why they are there and they respond, "Because my manager sent me." Often, management views PC training as a reward for a job well done.

> ELIMINATING INVALID expectations and assumptions is never easy, but trainers may be able to reduce them by communicating with users' management about them.

Reality: When training staff and classroom space are limited, as is the case in many organizations, people who attend training without a specific need waste everyone's time — their own, the trainer's and that of everyone else in the class.

More important, they take space that could be allocated to those who need the training. Sending people to a class who have no prospect of using the material can make training a very costly effort.

Eliminating invalid expectations and assumptions is never easy, but trainers may be able to reduce them by communicating with users' management about them.

They can do so using a variety of methods, such as meeting periodically with each department head (for example, every six months to a year); holding large forums for management; or sending out special mailings and writing articles for the company or information center newsletter.

More important than the format of the communication, however, is how trainers approach the subject. The key is to focus on benefits.

In other words, trainers should not find fault with management for erroneous expectations or criticize them for actions taken as a result.

Instead, trainers should articulate how computers can be used more effectively if training is properly understood and appropriately utilized. Trainers can work with department heads to identify users for whom training will be most beneficial. In the process, they can convey reasonable expectations.

Karten is president of Karten Associates in Randolph, Mass.

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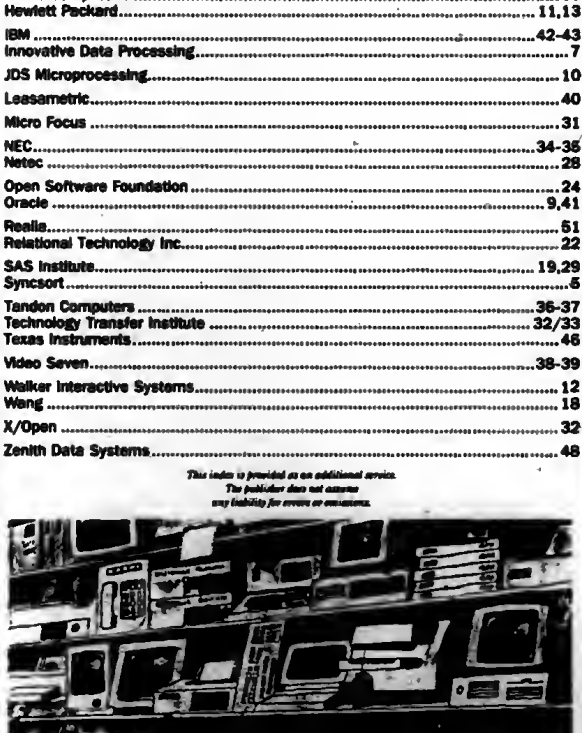

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Sept. 26	Hardware Roundup: Small Scale Systems	Sept. 9
Oct. 3	Hardware Roundup: Personal Computers and Workstations	Sept. 16
Oct. 17	AI/Expert Systems	Sept. 30
Oct. 31	Unix	Oct. 14
Nov. 14	TBA	Oct. 28
Dec. 5	LAN's	Nov. 18
Dec. 19	IBM-Compatible PCs/PS2 Market Products/Monitors	Dec. 2

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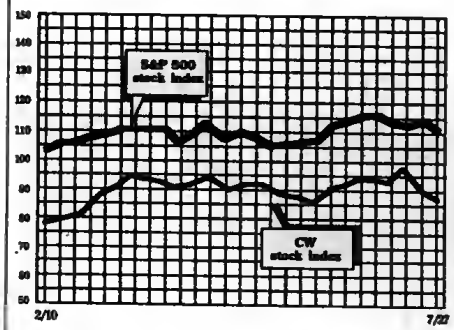

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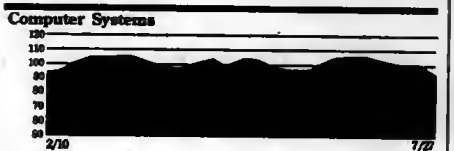

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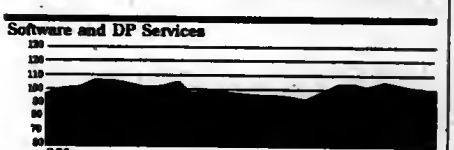

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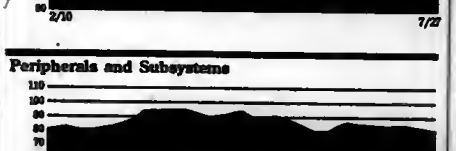

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EXCH		52-WEEK RANGE (1)		PRICE CLOSE JULY 27 1988	WEEK NET CHANGE	WEEK PCT CHANGE
	Communications and Network Services					
N	AMERICAN INFO TECHS CORP	100	74	80.13	0.6	0.8
O	ANDREW CORP	19	11	19.00	1.5	8.6
O	ARTEL COMM CORP	2	1	2.38	0.0	0.0
N	AT&T	36	30	36.88	0.9	2.9
O	AVANT GARDE COMP INC	6	2	2.25	0.8	55.7
O	AWATEK INC	16	6	6.12	-0.5	-7.5
N	AYDIN CORP	39	68	20.00	0.1	0.6
N	BELL ATLANTIC CORP	80	61	69.88	0.1	0.9
N	BELL SOUTH CORP	44	39	41.25	-0.4	-0.8
O	COMPRESSION LABS INC	6	2	4.00	0.0	0.0
O	COMPUTER NETWORK TECH	6	1	1.27	0.0	-1.2
O	CONTEL CORP	40	25	35.88	2.1	6.3
O	DATA SWITCH CORP	10	4	9.13	0.9	3.2
O	DIGITAL COMM ASSOC	46	20	33.75	-0.5	-1.5
O	DYNATECH CORP	32	14	21.75	-0.1	-0.5
	FIBRONICS INTERNATIONAL					
O	GANDALF TECHNOLOGIES	6	2	3.50	-0.1	-3.4
O	GENERAL DATACOMM INDS	7	5	7.13	0.0	0.0
N	GTE CORP	10	3	3.38	-0.1	-2.8
O	INFOTRON SYS CORP	43	26	38.75	0.0	0.0
N	ITT CORP	14	5	11.50	-0.9	-7.1
N	M A COM INC	68	42	50.63	-1.4	-2.8
O	MCI COMMUNICATIONS CORP	16	7	10.75	0.1	1.2
O	MICOM SYS INC	18	7	17.38	2.0	13.0
O	NETWORK EQUIPMENT TECH INC	17	7	14.63	-0.1	-0.8
O	NETWORK SYS CORP	38	12	20.00	-0.8	-2.8
N	NORTHERN TELECOM LTD	32	17	30.25	0.9	2.9
O	NOVELL INC	30	12	27.00	0.9	2.9
N	NYNEX CORP	78	69	64.88	-0.4	-0.6
N	PACIFIC TELESIS GROUP	34	23	28.25	0.4	1.3
N	PARADYNE CORP	6	4	4.75	-0.8	-2.5
A	PEIRPEL CORP	5	1	4.38	-0.1	-2.8
N	RACAL-ESSEX PLC	38	22	28.38	0.9	3.1
N	SOUTHERN BELL CORP	46	27	34.63	-0.4	-2.8
N	SOUTHWESTERN BELL CORP	46	27	37.88	0.1	0.3
O	3 COM CORP	28	12	18.25	-1.5	-8.8
O	UNISYS/BURROUGHS MERGER	14	5	12.31	0.0	0.0
N	US WEST INC	90	43	64.63	-1.0	-1.9
	Computer Systems					
O	ALLIANT COMPUTER SYS	21	6	6.75	0.0	0.0
O	ALPHA MICROSYSTEMS	7	3	6.25	-0.1	-2.0
O	ALTOS COMPUTER SYS	16	6	6.50	0.3	2.7
A	AMDAHL CORP	56	19	61.25	0.1	0.9
O	APOLLO COMPUTER INC	23	9	10.00	-0.8	-8.0
O	APPLE COMPUTER INC	69	32	44.25	-0.5	-1.1
N	BOLT BERANEK & NEWMAN	29	12	17.88	0.4	2.1
O	BRITTON LEE INC	4	1	2.88	0.2	7.5
N	COMPAQ COMPUTER CORP	75	38	61.25	-1.0	-2.0
O	COMPUTER AUTOMATION INC	18	3	8.00	-0.2	-14.9
A	COMPUTER CONSOLES INC	8	2	8.50	0.0	0.0
O	CONCURRENT COMP CORP	24	11	17.25	0.0	0.0
N	CONTROL DATA CORP DEL	38	69	24.63	-0.8	-3.0
O	CONVERGENT TECH	6	3	3.50	-0.1	-2.8
O	CONVEX COMPUTER CORP	17	6	7.75	-0.5	-6.1
N	CRAY RESH INC	119	47	81.75	-2.4	-2.8
O	DAISY SYS CORP	12	6	9.38	-0.6	-6.1
N	DATA GEN CORP	37	18	22.38	-0.6	-2.2
N	DATAPOINT CORP	6	3	8.25	0.3	3.8
N	DIGITAL EQUIP CORP	200	39	107.63	-0.8	-0.8
N	FLOATING POINT SYS INC	12	2	9.50	0.5	16.7
N	GOULD INC	28	6	14.88	-0.8	-4.8
N	HARRIS CORP	41	22	27.63	-1.4	-4.7
N	HEWLETT PACKARD CO	74	38	52.63	-0.4	-0.7
N	HONEYWELL INC	81	45	60.38	-3.3	-4.7
N	IBM	175	102	124.00	-1.0	-1.0
O	INFORMATION INTL INC	16	6	15.25	0.3	1.7
O	IPL SYS INC	3	1	2.25	0.1	5.9
N	MASS COMPUTER CORP	14	4	4.38	0.9	20.7
N	MATSUSHITA ELEC INDL LTD	228	103	202.25	13.9	7.4
O	MEGADATA CORP	6	2	2.91	0.0	0.0
O	MENTOR GRAPHICS CORP	28	14	21.75	-1.5	-4.8
N	NBI INC	13	4	4.25	0.1	4.0
N	NCR CORP	67	50	58.97	-0.8	-2.1
N	PRIME COMPUTER INC	31	12	14.75	-0.4	-2.8
O	PYRAMID TECHNOLOGY	18	5	14.00	-0.5	-3.4
O	STRATUS COMPUTER	28	16	25.75	-0.5	-1.9
O	SUN MICROSYSTEMS INC	44	14	39.75	-1.5	-4.9
O	SYMBOLICS INC	3	1	1.31	0.1	10.5
O	SEQUENT COMPUTER SYS INC	20	6	17.75	-0.6	-3.4
N	TANDEM COMPUTERS INC	37	66	17.38	-1.5	-8.7
N	TANDY CORP	57	29	43.88	-0.5	-1.1
O	ULTIMATE CORP	37	12	11.88	-0.8	-6.8
N	UNISYS CORP	49	24	35.00	0.4	1.1
A	WANG LABS INC	16	20	9.88	-0.4	-3.7
	Software & DP Services					
O	ADVANCED COMP TECH	6	1	1.19	0.1	9.9
N	AGS COMPUTERS INC	30	11	27.00	-0.1	-0.5
O	AMERICAN MGMT SYS INC	20	9	15.12	-1.8	-10.4
O	AMERICAN SOFTWARE INC	19	6	13.38	-0.1	-0.6
N	ANACOMP INC	12	4	6.63	0.1	1.3
O	ANALYSTS INTL CORP	10	4	8.75	0.6	7.7
O	ASHTON TATE	32	13	23.00	-1.3	-5.8
O	ASK COMPUTER SYS INC	16	6	13.63	-0.8	-1.5
O	AUTODESK INC	34	12	27.38	-1.1	-3.9
N	AUTO DATA PROCESSING	69	16	38.25	-1.3	-6.8
O	BOOLE & BABBAGE INC	12	6	8.88	0.1	1.4
O	COMPUTER ASSOC INTL INC	37	16	27.00	-1.6	-5.3
O	COMPUTER HORIZONS CORP	19	7	11.88	0.1	0.9
N	COMPUTER SCIENCES CORP	73	38	44.00	1.5	3.8
N	COMPUTER TASK GROUP INC	16	6	13.38	0.4	2.9
O	COSMOS INC.	17	5	5.62	0.9	3.4
O	COMSHARE INC	27	12	22.00	2.3	11.4
N	CULLINET SOFTWARE INC	14	4	7.25	-0.6	-8.8
N	DUQUESNE SYS INC	22	10	17.25	-0.8	-4.2
A	DATA ARCHITECTS INC	28	7	13.75	0.0	0.0
N	GENERAL MTRS (CLS E)	61	30	40.25	0.9	1.9
O	HOGAN SYS INC	14	3	4.13	0.1	3.1
O	INFORMIX CORP	31	12	14.75	-0.8	-25.0
O	INTELLICORP INC	6	2	3.88	-0.2	-5.0
O	KEANE INC	16	6	13.75	0.9	2.8
O	LOTUS DEV CORP	40	16	21.75	-1.5	-6.8
O	MANAGEMENT SCI AMER	14	5	6.00	-1.1	-12.3
O	MICRO FRD INTL CORP	7	2	2.25	0.0	0.1
O	MICROSOFT CORP	75	37	64.00	-2.8	-4.1
O	MORINO ASSOCIATES INC	20	7	9.0	-0.8	-1.4
O	NATIONAL DATA CORP	34	20	25.75	0.9	3.5
O	ON LINE SOFTWARE INTL INC	22	6	5.00	-0.8	-7.7
O	ORACLE SYS CORP	22	8	19.25	-1.5	-7.2
O	PANSOPHIC SYS INC	28	11	15.63	-0.8	-0.8
O	POLICY MGMT SYS CORP	60	88	23.25	-0.8	-1.1
O	PROGRAMMING & SYS INC	14	7	12.75	1.3	11.5
O	REYNOLDS & REYNOLDS CO	38	14	18.25	-0.8	-1.4
O	SEI CORP	22	10	18.50	0.0	0.0
O	SHARED MED SYS CORP	30	18	21.25	0.0	0.0
O	SAGE SOFTWARE INC	16	5	6.38	-0.3	-3.8
O	SOFTWARE PUBG CORP	25	5	21.88	-1.2	-5.4
A	STERLING SOFTWARE INC	11	6	6.50	-0.1	-1.5
O	SUNGARD DATA SYS INC	20	10	19.63	1.0	5.8
O	SYSTEMATICS INC	30	10	32.50	-0.8	-2.3
N	SYS. SOFT INC	28	7	17	-2.3	-11.7
O	VMI SOFTWARE INC	21	7	15.88	1.1	7.9
	Semiconductors					
N	ADV MICRO DEVICES INC	29	6	14.13	-0.8	-5.0
N	ANALOG DEVICES INC	24	8	14.38	-0.8	-1.7
N	ANALOGIC CORP	12	5	7.38	-0.3	-3.3
O	INTEL CORP	42	66	32.75	-2.8	-8.8
O	LSI LOGIC CORP	19	7	13.25	1.5	8.2
N	MOTOROLA INC	74	38	48.00	-2.3	-4.8
N	NAT'L SEMICONDUCTOR	22	10	11.13	-0.8	-6.8
N	TEXAS INSTRS INC	39	28	43.00	-2.8	-6.5
A	WESTERN DIGITAL CORP	20	11	14.00	-0.8	-3.4
	Peripherals					
O	ALLOY COMP.	13	2	2.25	-0.8	-10.0
N	AM INTL INC	9	2	0.75	0.9	12.2
O	AST RESH INC	21	6	15.88	0.4	2.4
O	AUTO TROL TECH CORP	7	2	5.00	-0.1	-2.4
O	BMC TEC INC	14	6	8.25	0.9	3.1
O	CIPHER DATA PRODS INC	12	6	8.75	0.0	0.0
A	COGNITRONICS CORP	6	2	3.00	-0.8	-7.7
N	COMPUGRAPHIC CORP	29	16	26.88	0.9	0.0
A	DATAPRODUCTS CORP	28	7	11.50	1.9	15.0
A	DATARAM CORP	6	6	7.88	0.9	6.9
N	EASTMAN KODAK CO	71	38	42.88	-1.5	-2.3
O	E M C CORP MASS	29	6	8.38	-0.1	-2.1
O	EMULEX CORP	8	4	7.25	0.1	1.9
O	EVANS & SUTHERLAND	30	14	17.20	1.9	7.7
O	ICOT CORP	6	3	3.38	-0.1	-3.8
O	INTERLEAF INC	28	11	12.50	0.1	1.0
O	IOMEGA CORP	6	1	3.38	-0.8	-14.9
O	LEE DATA CORP	6	2	3.12	-0.4	-10.7
O	MAGNETIC SYS CORP	6	1	2.16	-0.1	-2.8
O	MAXTOR CORP	09	6	6.63	-0.8	-0.8
O	MICROPOLIS CORP	30	13	15.00	-1.1	-7.5
O	MINISCRIBE CORP	17	6	12.25	-0.8	-6.8
N	MINNESOTA MINS & MFG CO	84	46	63.25	-0.8	-1.5
A	MSI DATA CORP	19	6	14.13	0.1	0.9
O	PERSONAL COMPUTER PRODUCTS INC	7	4	6.12	-0.1	-2.4
O	PRIAM CORP	8	1	1.63	0.0	0.0
O	PRINTRONIX INC	13	7	10.88	0.9	7.4
N	QMS INC	27	6	7.75	-0.5	-7.9
O	QUANTUM CORP	09	6	10.38	-0.4	-3.5
O	RANITEK CORP	6	1	0.63	-0.2	-23.1
N	RECOGNITION EQUIP INC	21	6	8.00	0.0	0.0
O	REXON INC	11	6	8.13	-0.8	-8.8
O	SCAN TRON CORP	17	7	15.50	0.0	0.0
O	SEAGATE TECHNOLOGY	22	09	12.63	0.4	38.3
N	STORAGE TECH CORP	4	1	2.63	0.1	5.0
O	TANDON CORP	5	1	3.50	-0.1	-2.8
O	TEC INC	6	3	3.25	-0.4	-11.0
N	TEKTRONIX INC	41	21	24.38	-0.5	-2.0
O	TELEVIDEO SYS INC	3	1	1.06	0.0	0.0
N	TELEX CORP	73	30	48.00	0.0	0.0
O	WYSE TECH	40	11	21.00	-0.8	-2.3
N	XEROX CORP	45	00	53.50	-1.0	-1.8
O	XIDEX CORP	15	6	8.63	-0.1	-1.4
	Leasing Companies					
O	CAPITAL ASSOCIATES INTER-NATIONAL INC	6	3	6.00	-0.5	-7.7
N	COMDISCO INC	37	12	21.75	-0.5	-2.8
N	CONTINENTAL INFO SYS	09	4	4.13	-0.8	-8.7
O	PHOENIX AMERN INC	12	4	2.75	-0.5	-8.8
O	SELECTERM INC	6	2	4.88	0.4	8.9

EXCH: N—NEW YORK; A—AMERICAN; O—NATIONAL; O—OVER-THE-COUNTER; S—SPLIT

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Fast action

DEC recovery leads market surge; Amdahl, Compaq slip

The recovery of many computer issues from a week-earlier slump helped the Dow Jones industrial average post its largest single-day gain in more than a month in action on Wall Street last week. Among the firms that benefited when the Big Board jumped 28.6 points Thursday was Digital Equipment Corp., which rebounded when earlier fears that the company would report disappointing earnings for its fourth fiscal quarter proved unfounded (see story page 4). The Maynard, Mass., giant finished Thursday's close at 105⅜, up 2⅜ points from a week earlier.

Other leaders for the four days of trading included IBM, which peppered the week with product announcements and price cuts and finished up 3¼ points to 123¾; Ashton-Tate Corp., which gained one point to 23¼; and NCR Corp., up one point to 57¾. Firms that slipped included Amdahl Corp., which felt the pinch when IBM unveiled a line of processors and fell 2½ points to 47½; Microsoft Corp., down 2½ points to 58¼; and Compaq Computer Corp., where reports that third-quarter results may be lower than recently reported second-quarter results helped the firm's issues fall 1¾ points to 57.

JAMES DALY

Bells

FROM PAGE 1

data world. Yet, the steady, collective stream of reorganizations, store closings and resignations tell otherwise.

For example, Pacific Telesis Group sold its Pactel Spectrum unit to IBM in March. The division, created from scratch, was one of the first companies to sell third-party network management services. One executive who left says the company was charging too much for the service but needed to price high to break even. It never did.

Within the last 30 days, the leader of the nationwide Nynex Corp. computer stores, James Turner, resigned without a successor.

The news came after a sales and marketing reorganization, and some speculate that Turner, a former IBM sales executive, left because he was not promoted to a higher position.

> "THESE GUYS are not good at marketing. They cannot compete with the likes of an HP or an IBM."
>
> FRED CHANOWSKI
> TELECOMMUNICATIONS MANAGEMENT CORP.

Bell Atlantic Corp. in Philadelphia has also stumbled. After spending $20 million on acquiring 53 Compushop retail operations in 1985, it washed its hands of all its stores to a New Jersey concern in February.

The company, analysts note, entered the computer retail market when sales were spiraling downward. When Bell Atlantic took over, it did little to change its low-end personal computer product line or to compete effectively with the Businessland, Inc. and Computerland Corp. stores.

Raymond Edgerton, Bell Atlantic Enterprises' director of product planning, says, "This was not viewed as a failure. It was a weaning process we went through in evolving our market strategy. Just as the market is not stagnant, our plans cannot be stagnant."

Spending spree

In that respect, none of the Bells could be accused of being idle. The Yankee Group, a Boston-based market research firm, estimates that the baby Bells have spent in excess of $1.5 billion on these unregulated subsidiaries.

Of the seven regional Bell holding companies, only Bell Atlantic can claim it is making money on its unregulated lines of business, particularly computer leasing and maintenance.

According to studies, the Gartner Group, Inc. says the seven corporations have lost at least a total of $100 million in computer sales from the unregulated entities.

What prevents the Bell companies from reaching customers in certain installations is the fact that users are not keen on having the regional holding companies offer anything other than telephone services.

"I'm strongly opposed to the [holding companies] getting involved in this," says one MIS executive at an East Coast bank. "Look at AT&T. It fell on its face selling computers. The [holding companies] are being spread too thin, and they are going to wind up making major mistakes."

Goffes

Major mistakes have already been made.

In entrepreneurial enterprises, regional Bell holding company executives use old Bell methods — hiring from within, solving problems through reorganization and spending lavishly on facilities and personnel.

That is how Pactel Spectrum suffered. As a former Pactel Spectrum employee says, "Here we were losing millions month to month, but we were still living in opulent quarters. They didn't know how to hold back."

Using old Bell thinking, the holding companies failed in promoting their products and overestimated the market.

"Their expectations for success are not firmly rooted in reality," says Howard Hecht, an analyst at Coopers & Lybrand.

Overestimated

For instance, when US West entered network management in 1986, it estimated the market would be worth $8 billion by the early 1990s. But analysts say that number is nowhere close to generally accepted projections, which are half that amount.

Plain and simply put, the Bells do not understand how to compete aggressively.

"These guys are not good at marketing. They cannot compete with the likes of an HP or an IBM," charges Fred Chanowski, president of Telecommunications Management Corp., a Needham, Mass., consulting group that monitors the regional holding companies.

Case in point: US West Information Systems, which carried Amdahl Corp. and IBM hardware, used to sell nationally but changed gears after failing to penetrate accounts outside its 14-state territory. The reason? Lack of market recognition.

According to a company spokeswoman, US West underestimated how competitive the market was outside its own territory. After pursuing national sales for a year, the company continued to lose money, she acknowledged.

While customers within the region had heard of US West because of the telephone company recognition, the name was unknown to users outside the region, and US West marketing representatives had difficulty even getting in the door to make sales pitches. Only recently have the Bell companies realized marketing must be at the forefront of priorities and made some changes.

'Weak link'

"We admit that marketing has been a weak link," says Vernon Jobson, Bellsouth Corp.'s group vice-president of communication systems. To give it the attention it deserves, Jobson says, Atlanta-based Bellsouth has elevated the position of vice-president of marketing to first-line officer.

The company has also put emphasis on vertical marketing to the insurance, banking, government and retailing industries.

The other regional holding companies are just as confident they can turn around the marketing problem, which stems from an inadequate understanding of what an MIS shop does.

In San Francisco, Pactel Infosystems' new marketing director, Sharon Sullivan, will be spending much of her time this month talking to users and attending focus groups. Pactel used to sell computers and networks through retail outlets but stopped after botching up retail sales.

In 1985, Pactel entered the computer store business and grew to as many as 26 stores in California and Northwestern states. Last December, Pactel acknowledged it would be closing 15 of its 26 outlets and using those sites as business offices to focus on direct sales.

One former executive there says the top management at Pacific Telesis had tried to solve problems through reorganization, hoping things would get better.

"In one year, we reorganized five times. Nothing helped," he says. Another former Pactel executive blames top management for the company's lack of long-term vision and planning in the retail arena. Projections for success were unrealistic, and "the locations we had for the stores were very expensive to lease," he says.

Since then, the company has decided to go directly to corporate accounts.

Sullivan says Pactel has recognized the need to focus on customers before technology, adding that the number of corporate customers has increased in recent weeks.

Puzzling freedoms

While the need to understand customers and aggressively market to them remains a long-standing dilemma, the Bell companies are still wondering exactly what to do with their newfound freedoms. While barred from manufacturing, they are free to dabble in a variety of enterprises.

The holding companies have fared well in their computer leasing efforts, mainly because they acquired existing companies that had strong market presence. According to Howard Anderson, an analyst for The Yankee Group, the Bell Atlantic-Sorbus, Inc. maintenance and leasing subsidiary is a first-class operation.

Bell Atlantic Enterprises' Edgerton says the corporation has been profitable in this line of business.

For New York-based Nynex, profits from Nynex Business Information Systems Co. will come by 1991. As the only holding company left in the computer retailing game, it has more than 100 Nynex Business Centers.

Making a name

According to Harvey Leong, Nynex's director of corporate planning, since Nynex is selling what all competitors are providing, the company's goal is to carve a reputation for immediate customer support and superior service. "We have to make sure people know and feel that," he says.

However, in most users' minds, there is no compelling reason to buy computer services from a Bell company, whether it is involved in retail, development or systems integration.

John Hammitt, MIS director at Pillsbury Co., notes, "The Bells have to differentiate themselves from the rest of the pack. Where is the added value?"

That value does not come from just being a Bell holding company, he adds.

Party lines

Telephone company executives were asked to cap their firms' strategic role in the sales of computer and networking gear.

"Our goal is to work together across our subsidiaries. For now, we are putting our efforts on vertical markets that are transaction-intensive, such as retail, insurance, government, banking, finance and distribution."

Vernon Jobson, group vice-president of communication systems, Bellsouth Corp.

"We're not interested in the box sale. We are going to use our experience and knowledge in selling entire integrated hardware and software solutions within our 14-state region."

Dick Layton, vice-president of product planning, US West's data systems group

"We are still voice-oriented. This is the field we have purposely decided not to get into yet, but we are constantly evaluating new proposals."

Rick Moore, assistant director of strategic business development, Southwestern Bell Corp.

"We are interested in marketing end-user integrated voice and data solutions through Ameritech Communications, which are the regulated sales entities named after our five state telephone companies."

Steve Nelson, vice-president of marketing, Ameritech Communications

"We are going to do LANs and service better than anyone else. Our target audience is the medium-to-large business customer within California and the Northwestern states."

Steven Hubbard, director of planning, Pacific Telesis Group's Pactel Communication Companies

"Although we are national, we are positioning our customers in the Northwest, where we are lucky enough to have a strong base of multinational users. We are selling the same things that everyone else sells, so we want to be known for our quality service."

Harvey Leong, director of corporate planning, Nynex Corp.

"We want to provide the integrated solution: software, voice, data and computer maintenance. And our target includes all national customers from small to large."

Raymond Edgerton, director of product planning, Bell Atlantic Corp.'s Bell Atlantic Enterprises

IBM snags air contract

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — IBM won its biggest and perhaps most challenging contract ever last week when it captured a $3.6 billion federal contract to build the next generation of air-traffic control systems.

Allan McArtor, administrator of the Federal Aviation Administration (FAA), called the project the largest real-time computer system ever developed.

William D. Carson Jr., IBM's general manager of the program, told *Computerworld* that the contract will require two million lines of code in the Ada programming language — the largest Ada project to date — and will limit hardware downtime to two or three seconds per year.

Possible applications

The fault-tolerant software needed to achieve that reliability record is likely to have commercial applications in the banking and insurance industries, Carson noted.

In addition, the contract will involve at least two unannounced IBM products: a 32-bit reduced instruction set computing microprocessor for the workstations and a new member of the 370 mainframe family, Carson said.

The project, called the Advanced Automation System, will replace all the computers and radar screens now in use at federal airport towers and provide controllers with large color monitors to help them manage traffic flows. Delivery of the workstations will begin in 1990, and the system is expected to be fully operational in 1999.

Carson said the workstations at each regional traffic control center will be linked by a 32M bit/sec. IBM Token-Ring local-area network.

The 5,000 workstations, called sector suites, will feature multicolor displays of traffic, weather and flight data and allow controllers to plot start-to-finish flight plans.

IBM's *air-traffic system*

Mimi Dawson, deputy secretary of transportation, said that displaying a variety of data at a single workstation will be a vast improvement of the current system, which requires controllers to monitor flight plans on pieces of paper at the same time they are watching radar screens.

IBM's Systems Integration Division, based in Bethesda, Md., won the contract after a four-year design competition with Hughes Aircraft Co., a subsidiary of GM Hughes Electronics Corp.

Dawson said both bidders offered acceptable technology but IBM won because of its lower price.

IBM's team includes two major subcontractors that will handle roughly 50% of the work: Raytheon Co., based in Lexington, Mass., which will provide the display consoles; and Computer Sciences Corp.'s Systems Group, based in Falls Church, Va., which will provide software development support.

The contract revenue will not have a major impact on IBM's annual profits because they will be spread out over 12 years. But IBM's Carson said that in addition to the initial contract and commercial spin-offs, IBM stands to gain lucrative follow-on contracts with the FAA as well as contracts for foreign air-traffic control systems.

Any takers for OS/2 packages?

BY DOUGLAS BARNEY
CW STAFF

According to an IBM directory, a product called PS/2-TCP/IP that runs under IBM and Microsoft Corp.'s OS/2 should have shipped by now. But instead of forging ahead into uncharted OS/2 territory, Frontier Technologies Corp. has stopped development because, supposedly, nobody wants it.

"We don't know when it will come out," Frontier President Prakash Ambegaonkar said.

An OS/2 version of Enable from The Software Group in Ballston Lake, N.Y., is also supposed to have shipped. Even though the product has been promised and is technically late, no customers have complained, according to Sally DeVito, product marketing manager at the company.

An overdue OS/2 version of Gammafix from Gammalink in Palo Alto, Calif., has not shipped yet either. "I had one person ask me about it," said George Mount, product manager for Gammafax. But that person was a reporter from a computer trade publication, not a customer. "If we never get a request, we will never finish the product," Mount said.

Although the IBM OS/2 directory lists more than 100 applications that should be shipping, a good many are not, and nobody seems to care. In fact, some could joke that there are more applications than customers.

Even vendors that are shipping applications report a dearth of sales. "We haven't sold lots of them. We have sold some," said Abraham Pomanski, president of Computer Associates International, Inc.'s Migro Product Division, which currently sells two OS/2 applications.

Waiting for takeoff

Conetic Systems, Inc. in San Leandro, Calif., is still waiting for the OS/2 LAN Manager to materialize so that the market for its Higgins communications software will take off. As it currently stands, a single-user Higgins product for OS/2 is available, but less than 10 have been sold, said Howard Case, vice-president of marketing at Conetic. "The demand is minuscule," Case lamented.

It is clear that purveyors of single OS/2 applications, such as word processors, are having a tough selling job. It makes no sense for a user to upgrade until the entire array of everyday applications works in the OS/2 environment.

What is less clear is the reason why an OS/2 version of Enable fails to attract attention. Enable, an integrated package, is the only software that many customers of The Software Group use. In theory, there should be more of an incentive for these users to move to an OS/2 version. But there is still no demand.

PC price

FROM PAGE 1

plications are worth it," said Frank Rogers, MIS manager at Penchiney World Trade USA, Inc. in Newport, R.I.

At their peak, price cuts were a boon to new customers and an annoyance to those stuck with overpriced year-old machines. For example, the street price for an Epson America, Inc. Equity I was nearly $1,600 in June 1986, according to "The Wohl Report on End-User Computing" from Wohl Associates. A year later, it was less than half that price, selling for a mere $749 in the same configuration. Today, however, the system sells for $888.

For analyst Aaron Goldberg, a vice-president at International Data Corp. in Framingham, Mass., price stability on the low end, particularly the so-called no-name clones, is based on simple economics. Since demand for low-end systems has fallen relative to faster PCs, fewer low-end components are being made, and these component costs are no longer dropping.

"We have seen the price of low-end XT-type machines remain constant for the last six months at about $600," Goldberg said, referring to the IBM Personal Computer XT.

This jibes with experiences related by users. For Ray Barron, the end of price cuts for Intel 8088-based PCs in late 1987 marked the end of a great era.

"Prices kept going down, so it was easier for us to meet our demand," said Barron, information center manager at Michigan Consolidated Gas Co. in Detroit.

The used-computer market, which is a barometer for the overall market, has also been stable. On the Boston Computer Exchange, the price of a used dual-floppy IBM PC has hovered at $700 to $800 for more than a year, Exchange President Alex Randall said. "It's like a $500 Volkswagen. It gets to a price where you say, 'It just can't be worth less than that,'" he said.

Price stability has also hit the market for 80286 and 80386 machines. "We have been buying all ATs, and we noticed in fact a price increase," Penchiney's Rogers said.

While some 80286 prices have continued to decline, many vendors have been releasing faster models with more features and higher prices. Most of the price drops have been for older machines from second-tier vendors such as Leading Edge Hardware Products, Inc. and NEC Information Systems, Inc.

In particular, high-end 80286 machines packed with expensive random-access memory have held steady. For example, the price of the IBM Personal System/2 Model 50 has dropped only $300 since the middle of last year, according to Wohl Associates. That amounts to unusual resilience for a pricey IBM machine.

After a quick plunge early in their life cycle, Intel 80386-based machines have experienced price stability similar to their slower brethren. A Compaq Computer Corp. Deskpro 386 sold for $6,299 on the street in October 1986, shortly after its introduction. A month later, the price fell to $5,695 and then to $4,000 by March 1988.

But there it has stayed, pretty much unchanged for some four months. As of last month, that same machine still sold for $3,899. Despite a major drop in price early this year, IBM's PS/2 Model 80 has also held its own with virtually no change in street price.

And all that makes the purchase of new PCs tougher for users to justify. When prices were falling, "it was easy to sell to management the idea that we need more PCs," said Rogers, who buys primarily 80286-based systems from Dell Computer Corp.

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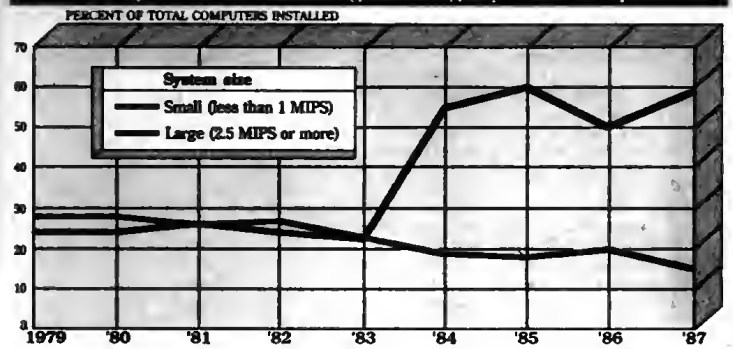
TRENDS

State government

As small systems inventories grow, large systems' drop



While most market research focuses on the Fortune 500 world and sometimes on the federal government, it seems there is precious little MIS research on state governments, though they represent a $3 billion market for information technology.

That is why the annual 50-state survey by the National Association for State Information Systems, Inc. (NASIS) has become an important resource for vendors and researchers, according to Carl Vorlander, executive director of the Lexington, Ky.-based group.

One trend that the 1987 survey documents, to no one's surprise, is the tremendous growth of small computer systems. Microcomputers accounted for nearly 60% of this market's 1987 computer inventory, and some states showed increases of 200% in the use of micros.

State governments with the most micros were Florida, Washington and New Jersey.

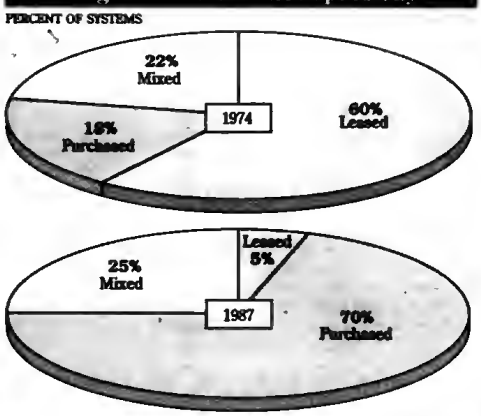
The way states acquire their systems has also changed. In 1974, 60% of the computer systems were leased, but now only 5% are leased and 70% are purchased outright.

Salaries in state MIS operations increased an average of 5.7% from 1986 to 1987, with some top management salaries exceeding $70,000, Vorlander said. In many cases, salaries were slightly higher in the most populous states because they have the largest MIS operations, he explained.

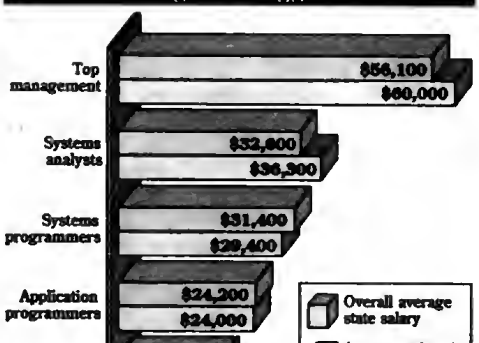
Spending for personnel accounts for 36% of the state MIS budget, an amount equal to the expenditures for hardware and software, the NASIS report noted.

MITCH BETTS

Leasing declines as states opt to buy



DP salaries higher in bigger states



*Includes California, Florida, Illinois, Michigan, New Jersey, New York, Ohio, Pennsylvania and Texas

INFORMATION PROVIDED BY THE NATIONAL ASSOCIATION FOR STATE INFORMATION SYSTEMS, INC.
CW CHARTS

INSIDE LINES

Well, *their* add-ons work. IBM's OS/2 Extended Edition shipped Friday, two days ahead of schedule. But knowledgeable sources say the IBM label on the box refers not only to the product's author but also to the hardware upon which it will run. While some have run the program successfully on machines from Compaq, add-in boards may be another story. Apparently, IBM has expended no effort to write drivers for third-party boards but has put plenty of effort into compatibility with its own boards, which often command a premium price. IBM says the add-on market is just too big to ensure that everybody's products will work.

And how about The Other operating system? IBM's PC-DOS 4.0 just started to ship, and already some problems are reportedly showing up. In this case, the problems involve the built-in support for the Lotus/Intel/Microsoft Expanded Memory Specification 4.0, which allows the machine to use as much as 32M bytes to store data. It just don't work right, the techno-weenies say. Being such a critical component of the new operating system, and certain to generate a Page 1 "DOS bug!" story somewhere, we should expect a quick fix so anxious upgraders can start moving.

Let's not forget about hardware. Users of Sysgen, Inc.'s Bridge-File 5½-in. external dual-density disk drive for IBM's Personal System/2 computers may have discovered that the product does not work on the PS/2 Models 50Z and 70. But help is on the way, according to Sysgen marketing manager Doug Bercow. He says the changes in the wait states and speeds on those PS/2 models created problems but that the company's engineering team came up with a software fix that allows the product to work with the entire PS/2 line. The fix will be shipping this month, he said.

If only Ed Meese were as careful. Defense Secretary Frank Carlucci, who was on the Unisys board of directors prior to resuming federal service, has excused himself from the investigation of Unisys in the big defense procurement scandal. Carlucci wants to avoid any appearance of conflict of interest, particularly after Rep. James Florio (D-N.J.) asked whether Carlucci should be involved in the probe.

Network incompatibility. The OSI/Network Management Forum could have used some network management last week. During a conference call that the newly formed vendor consortium had set up with a large group of consultants, a shrill squealing noise completely disrupted communications. Since there was no way to pinpoint which of the 30 participants' lines was at fault, the call had to be terminated.

What if . . . Hewlett-Packard won a multimillion dollar contract to supply a major airline with RISC-based superminis, micros, New Wave and the whole kit and caboodle? What if HP teams up with Zenith and wins a $4.5 billion, seven-year Air Force contract for PCs and Unix-based workstations? Sources say the first deal is done and the second is ready to be signed, if it hasn't already. What if DEC and IBM begin to think twice about their competition?

Maybe black and blue would be more his style? John T. Molloy, the author of *Dress for Success*, was heard in a radio interview saying that there is a proliferation of the low-class tan suit in California's Silicon Valley because most of those who work in the valley come from "blue-collar backgrounds," and thus don't know how to dress properly. Proper, even in the heat of summer, according to New Yorker Molloy, are the blue or gray pin-striped masses the author spotted during his recent visit to San Francisco.

IBM's price hike announcement apparently caught its announcers a little by surprise. Although it included "most" products and services, excluded were the AS/400, all 3090s, software for PCs, etc, etc. When we called to find out what was included, nobody could say right off the bat. Is that any way to run a multibillion dollar company? When customers start getting invoices showing the increases, call the hot line at 800-343-6474 or 508-879-0700 and let News Editor Pete Bartolik know how the 3% to 5% increases show up on the bottom line.

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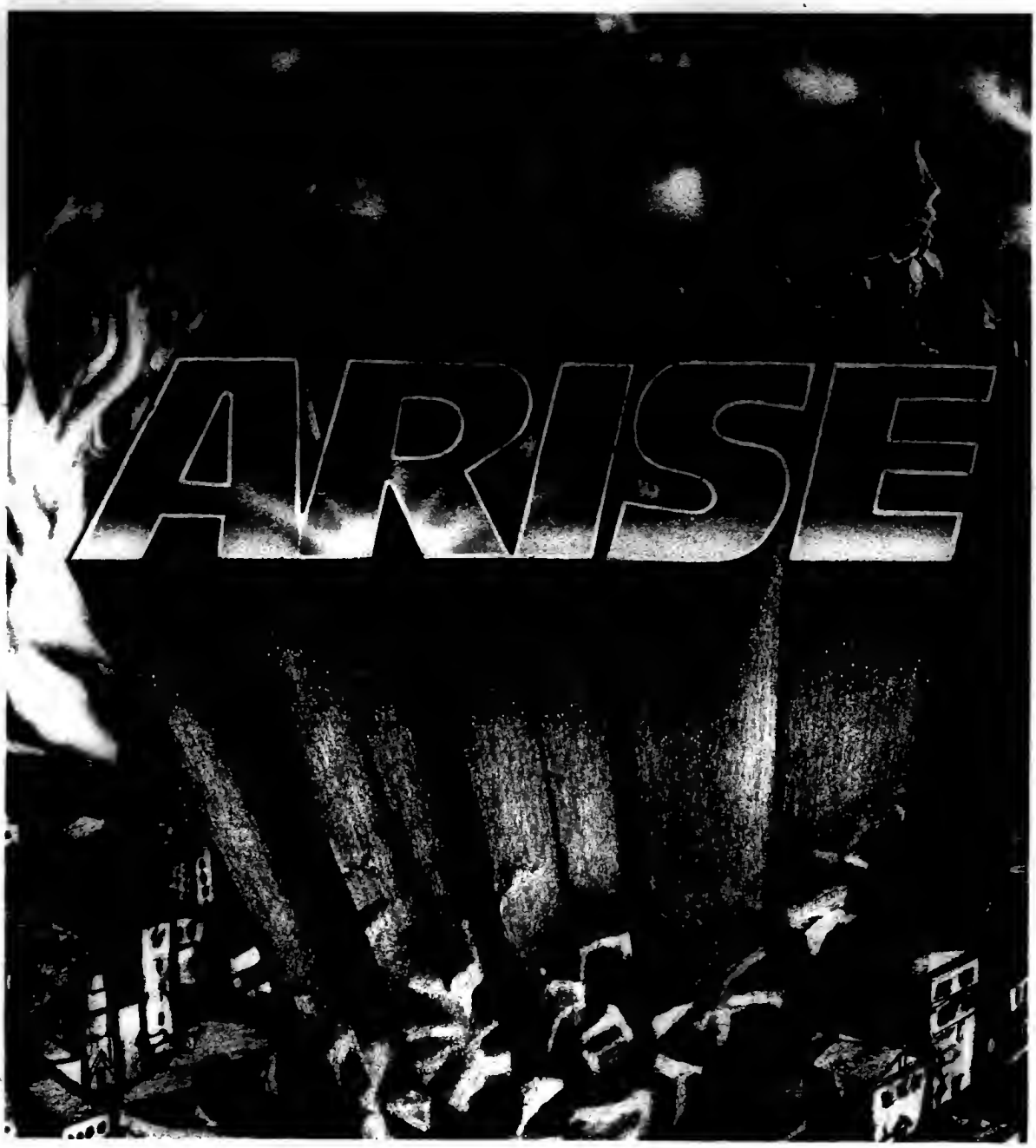

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